

April
April 6

~~Field Notes of Edmund Heller~~ 1915 43
Itinerary

In company with Dr. Bingham &

made my departure from Cuzco at 9 A.M. with a light collecting outfit and camp equipment ^{packed} on 4 mules, ^{in charge of} with an arriero, Narciso Lisarzo, ^{and} a Peruvian soldier Tomas Cubinas, and H.B. as guide to the ~~first~~ camp. The day was clear & warm with a few fleecy cumulus clouds in the sky. After we had climbed out of the ~~deep~~ valley in which Cuzco is situated and gained the open pampa a magnificent view of the distant landscape unfolded itself to our eyes. Ahead of us but very distant in the direction of our road could be seen the snow covered summit of the lofty Mt. Salcantay the highest peak of the Cuzco Andes. It stood out against the blue sky as ~~the~~ a sharp cone of pure white rising abruptly to a sharp apex ^{and} having every appearance of being inaccessible. Somewhat less distant we made out the snow covered cone of Mt. Incaracca and farther to the left or west of Salcantay the rounded snow dome of Mt. Soray was visible. The fields along the roadside were green with new grass ^{and} fresh crops. The whole district appeared to be highly cultivated with only a bush or patch of native vegetation in waste places to give a hint of the ~~the~~ natural flora. One of the conspicuous bushes was a yellow flowered pea resembling the Cassia, a common hedge

The commonest most conspicuous tree in the landscape 45
was the eucalyptus, groves of which were growing near many of
the huts.

plant was a cholla cactus, very spiny
+ tree like in habitⁿ. The only native tree
apparently in the landscape was a large leaved elder
often seen near the adobe houses. A common bush
was the composite Baccharis. In the field in places
were adorned by clusters of blue iris and the golden
cups of daisies. A common plant,^{and one} apparently
introduced from the north, was the Indian fig
cactus. Another common hedge plant of decidedly
Mexican appearance was the large gray century
plant or magway used in Mexico for the manufacture
of pulque but the Terichuas are ~~evidently~~
ignorant of its value as a source of chica.
^{or beer?}

→ Birds were abundant along the roadside but were few in number of species. Most of them were in song and ~~apparently~~ preparing to nest. The most melodious of them and as well as the commonest species was a crested sparrow about the size & coloration of our much detested English sparrow. The song ~~was~~ resembled that of our song sparrow somewhat but was of considerably greater length. A flock of yellow ^{+ black} goldfinches ~~the males with black heads~~ were seen in the fields. Perched upon the telegraph wire which followed ~~the~~ the roadway I saw at intervals a fair-sized brilliant emerald-green hummingbird which alone among the birds ~~seemed to~~ used the wire as a perch. A large golden flicker or woodpecker was an unexpected bird to find in this treeless region. This species lived on the ground and like our American flicker, feeding on insects captured about anthills and clay banks. On the marshes

We travelled along ^{for some distance on the} ~~parts of~~ ^{across} the famous Inca road
 which extended ~~throught~~ ^{across} the empire from Cuzco to Quito
 at one time. Where we met it the paving
 was irregular + missing in many places, the
 usual road followed during the dry season being
 a red earth track bordering the paving. No
 carts are in use here or elsewhere in the district
 the transport being pack mules and Indian porters.
 It seemed strange to pass over broad level
 pampas on wide roads ^{still unimproved} ~~over which no~~ wheeled
 vehicles ~~ever pass~~ of any sort. The meadows
 were without either llamas or alpacas being
 devoted to horses, cattle, + sheep which were doubtless
 more profitable.

as we approached Anta flocks of a large, black ^{glossy} ibis were seen together with the white Andean gulls. As the day was warm and bright I was surprised to discover no lizards or other reptiles on the adobe walls or in the rock crevices bordering the road. Apparently lizards do not occur in the Cuzco district at such an altitude ^{11,500 ft.}

We made camp at 5 P.M. on the edge of the Anta plain at the base of some high hills about a league west of the pueblo of Huarocondo. The plain spread out before us was several leagues in diameter, verdant green with grass on which horses and cattle were feeding. A river ran thru the center and connected with irregular ponds of standing water scattered over the meadow.

Before retiring I set out some 36 mouse traps in the bushy hedge which marked the limits of a wheat field near our camp.

The night ^{of the 7th} was clear ^{and} quite cold but no frost occurred. The traps ^{captured} 12 specimens of rodents, all of them, except 2, a species of Euneomys similar in general appearance to one meadow mouse. ^{of the genus} ~~The~~ Microtus of the 2 others, one was a ^{small} species of Cryzomys or rice rat and the other the cosmopolitan house mouse, Mus musculus which had here reverted to a wild life in the fields in competition with the native species. The ~~Microtus~~ ^{Euneomys} produce large families, some of those caught containing as many as 8 embryos. The mounds made by the ~~Microtus~~ were not very distinct and nowhere were there burrows.

See reverse
side of last page

April
17

In the morning Dr. Brinham continued on his journey to Ollantaybambilla leaving me stationed near Huarocondo.

such as our meadow-mice make in the meadows of the U.S.A. I was surprised to find these damp meadows without burrowing mammals of any sort. In the afternoon I again visited the traps and found 2 ^{more} ~~Abodons~~ ^{Eumomys} and one ~~Crizzomys~~ ^{partially}. It is evident that these species are ^{partially} diurnal, as well as ~~nocturnal~~.

April

TP 8:

I spent the day ^{to get} skinning more rodents of the same species as I had taken yesterday and in setting some traps about an old adobe ruin in one of the wheat fields. Circling about the camp I saw a good sized Eagle ^{Geranæetus} similar in appearance + size to the Balthasar of Africa. The tail in this species was very much abbreviated + when in flight it appeared quite tailless, the flight feathers reaching and blending with the tips of the tail feathers forming an evenly ^{spectacular} outline.

TP 9:

During clear nights there was a very heavy dew which made travel thru the grass in the early morning an exceedingly damp affair. While examining the traps ^{of the 9th} on the morning I saw a large horned owl, in size + color like our Great Horned or Cat Owl. This one had been flushed by a band of sheep from ~~the~~ grassy hillside. I have also seen a sparrow hawk near camp, a marsh hawk, the Andean gull, the crested sparrow and ^{two species of} goldfinches near camp. I caught several specimens of a large species of ^{Phiphiomys} ~~Crizzomys~~ at the adobe ruins and several ^{Eumomys} ~~Abodons~~ ^{at the lock}. It rained nearly all night but not heavily. At 8 AM it cleared. Some Indians digging brushwood

TP 10:

April

on the hillside above camp captured several large mice of the genus Rhipidomys. These they brought to camp with several suckling young. I caught ~~one~~ ^{more} a Abodon today having a pure white under surface instead of the usual drab.

~~Oct 11th~~

Rained again during the night but less than last night. Several Indian boys brought in broods of nestling birds to sell. Some of the birds were goldfinches others were sparrows & a few were grackle-like in appearance. This is without doubt the nesting season ~~with many~~ of many birds altho it is virtually fall. A ^{male} grosbeak

I shot yesterday was a breeding bird judging by the enlarged condition of his testicles. In the afternoon some Indians brought in to camp 3 small brown snakes representing 2 species. Much of the soil from the steeper hillsides bordering the Antio Valley has been cut into deep gullies by the rains owing to its use for cultivated crops without the precaution of terracing. In looking at the Huarocondo River as it crosses the valley it presents an absolutely straight outline like a surveyed ditch ~~has~~ owing ~~to~~ to the straightening process it ~~has been~~ subjected to by the Incas several hundred years ago to economize ~~the~~ or gain agricultural land in the valley.

~~Oct 12th~~

I caught 2 more white bellied Abodons ^{in the traps} ~~and~~ The Indians also added a new species of rodent to the collection which they captured on the hillside. After breakfast I went hunting in the shallow ponds covering the lower part of the valley near Huarocondo. I encountered flocks of large white four-winged geese known ^{locally} as ayallatus, also several

brownish ducks ^{the} size of mallards & a species of smaller duck ^{the} size of teal. There were a few black-bits about and a blackish moor hen or gallinule as well as a small snipe or sandpiper. Most of the waterbirds were exceedingly wary and as the ponds were without cover no birds were obtained.

In the afternoon I witnessed an unusual phenomenon. An immense waterspout ^{which had} formed during a rainstorm & moved across the western end of the valley some 6 miles distant. It was in appearance a long slender column reaching from the valley ^{floor} to the clouds 200 or 300 feet above it and travelled at considerable speed. I watched it for a half or perhaps $3/4$ of an hour before it vanished.

Well out in the valley about 1 mile from camp I found the skinned carcass of a horse which had reached a decayed & obnoxious stage but had not yet been visited by either coyotes or vultures. During later in the day I saw a single condor soaring above the carcass but the great bird did not venture to alight. Near the camp much of the roadside vegetation is undoubtedly introduced plants such as cholla cactus, bur clover, alfalfa, yellow mustard, and other weeds. Another common introduced plant was watercress which ^{grew thickly} ~~thatched~~ in all the small streams bordering the meadowland.

April 13th It rained hard all night but cleared soon after sunrise. The mountains surrounding the valley were covered by fresh snow down to an elevation of about 12,000 feet but the sun soon dissipated it. At noon I packed up the outfit and broke camp moving down the valley into the canyon of the

Huarocondo River to Chospizoc where a rickety Indian bridge & a few huts are situated not far from the old Inca fort^{ress} of Huata. The meadows near the pueblo of Huarocondo were flooded by the recent rains and the river issuing from the Anta plain was a turbulent brick red stream heavily loaded by sediment. Our road lay directly down the pueblo which looked at a distance rather picturesque & cheerful with its tiled houses, ~~and~~ mud walls, plaza and church. Within the gates however it was like most Indian villages, a mess of filth. The narrow streets paved by rough rocks had each an open ditch of running water in the center in which filth was heaped & pigs wallowed. The custom here prevalent of making all streets sewers and lining them by high walls is as barbarous as it is ugly. The few bright spots tolerated in ~~these~~ villages are confined to the patios of the larger residences and the plazas.

The ride down the canyon of the Huarocondo River was interesting & refreshing. The road lay along the steep canyon side or else followed closely the stream margin on the floor of the canyon. The steep canyon sides were without cultivated crops but ~~was~~ ^{were} uniformly grass covered. Bordering the stream was a scattered growth of small trees and bushes among which I noted the golden flowered Cassia, pepper trees, willows, alders and others which were not familiar to me. Birds were abundant.

the commonest ones being ^a metallic green hummingbird, ^{a black-headed} grosbeak, doves, ^a green paroquet, a golden flicker, ^{several} sparrows, etc. On the rocks a few lizards were seen, the first I had noted in Peru. The bridge of Chospizoc was reached at 4 P.M. and we ^{pitched} ~~stuck~~ camp on the riverside. At this spot the canyon was about 100 yards wide and which gave space enough for the cultivation of several acres of corn, wheat & potatoes. The sides of the canyon were steep but ~~composed~~ ^{composed} of alluvial deposits and ^{were} grass covered to their summits which ~~were~~ ^{towered} 3,000 feet above us. At the river margin was a growth of willow trees and bordering the corn fields were peach & apple trees in fruit and a native tree of grayish appearance with the foliage of an olive but bearing composite flowers. Peppertrees were numerous but of small size most of them apparently having at one time been cut down for firewood and ~~then~~ later regenerated themselves by a second growth from the old stumps. I noticed many boulders of white marble at the roadside but I have seen nowhere rock ledges or rock formations in place.

On the 14th it rained during the night again. The 24 traps set about fields secured only 4 specimens ^{of rodents}. One of these appeared to be a new one with a very long pinnulate tail, a species of Rhipidomys doubtless. The others were Euneomys. Small flocks of the green paroquettes were seen from camp. At dusk they were seen entering the vertical holes ⁱⁿ ~~in~~ ^{the} round cliffs high above the river where

of the ones we shot

59

They ^{they} ~~apparently~~ roosted ^{were} They ~~are~~ not at ~~present~~ ^{this season} nesting judging from the small size of the testicles & ovaries. The sides of the canyon at this point are composed of red adobe earth interspersed with an occasional gravel deposit but without any rock formations ^{exposed}. The canyon thus has every indication of being very recent, the so recent that there has not yet ~~elapsed~~ ^{elapsed} sufficient time ~~elapsed~~ to erode the adobe & gravel deposits and ~~expose~~ the rock formations which underlie them. The stream boulders are chiefly various colored sandstones & marbles.

15: The night was rainless. When darkness had fallen I went down the road with the head light hunting for nocturnal mammals but shined none. In one of the adobe cliffs I shined the eye of a nightjar which glowed fire red but the bird escaped. Later a sparrow hawk charged the light and was captured by Tom in the folds of his coat. This is the first instance of the kind I have ever experienced.

16: During the night a vampire attacked my mule on the middle of the back and next morning a telltale streak of dried blood indicated the position of the wound where the bat had ~~sucked~~ fed on his blood. The altitude here is 10,000 feet and was the highest at which attacks of this sort were encountered by us.

16: During the night of the 18th a rodent new to the collection was trapped at the edge of a corn field beneath the tangled shrubbery clothing a stone wall. The most of this particular rat was elongated into a distinct tho short proboscis and I later learned it was a member of the genus Exymycterus a high Andean group and tho only ~~rodent known to~~ proboscis bearing rodent known. This day had been set aside for deer hunting on the high ridges above the narrow valley ~~of~~ in which we were camped. Our host of the Chospayoc farm assured us of the great number of deer to be found in the immediate ^{vicinity} ~~vicinity~~ but when the appointed day came he failed to carry out his offer to guide us to their haunts but sent a small boy instead. He evidently had little confidence in his own elaborate statements of the abundance of game. Tomas, the youthful guide, and myself departed from camp at 9 A.M. ~~following~~ ^{the} trail which winds spirally up the mountain side to ^{the village of} Huispanof. After climbing 1500 feet we left the trail and struck up thru old fields & terraces for the main ridge of the mountain. As we were proceeding on our way at an altitude of approximately 12,000 feet Tomas called my attention to a deer some 500 yards away descending the open grass slope in front of us. We at once fell back to a small depression out of sight and then stalked over the ridge to get ^{another} ~~a view~~ of the deer. What was our amazement to see ^{the original} ~~here~~ headed our way as I waited ^{partially} ~~concealed~~ by the grass. When ~~it~~ reached within 250 yards I open fire & dropped ^{it} ~~her~~ by a shot thru the shoulder. No horns had been evident to our sight but we were not at all certain that ~~this~~ there absence meant a doe. However ~~she~~ proved to be a female of adult size and similar in color & ^{character} ~~size~~ of tail to the Virginia white-tail. The body was in lean condition as usual in Andean deer & the stomach contents consisted ~~of~~ ^{of} ~~various~~ twigs & leaves of various bushes with only a ^{few} ~~straggling~~ blade of grass cropped no doubt while browsing. As we were skinning the

the specimen two condors appeared wheeling above us in great circles interested in the sight of ~~meat~~ venison. Tomas & the boy however carried away the ~~substance~~ entire carcass of meat leaving only the viscera for the great birds. We continued our way along the ridge but saw no further evidence of deer so we retraced our steps toward camp. The ridge on which we were hunting ~~was the same~~ ~~as that~~ held on its eastern slope the village of Huispang situated a thousand feet below the ridge. From our elevated position we could see across the narrow valley the ruins of the ancient Inca city of Huata, the walls of which were still standing on a sharp ridge which dropped away sheer a thousand feet on either side to the valley at Chospayoc. The vegetation at this altitude ^{13,000 feet} consisted solely of grass but lower down at 12,000 feet bushes became a feature ~~continued on down to the~~ and continued ~~on~~ down to the willows & popple trees of the valleys. One of the conspicuous flowering plants was a large shrubby lupine ~~with blue~~ bearing a profusion of blue flowers. The grass & bushes grew luxuriantly at this season, in places where the soil was rich growing to a height of two or three feet.

ITINERARY.

April 6th.

In company with Dr. Bingham I on the 6th of April made my departure from Cuzco at 9 A. M. with a light collecting outfit and camp equipment packed on 4 mules, in charge of an arriero, Marciso Lisarato and a Peruvian soldier, Tomas Cubinas. The day was clear and warm with a few fleecy cumulus clouds in the sky. After we had climbed out of the valley in which Cuzco is situated and gained the open pampa a magnificent view of the distant landscape unfolded itself to our eyes. Ahead of us but very distant in the direction of our road could be seen the snow covered summit of the lofty Mt. Salcantay the highest peak of the Cuzco Andes. It stood out against the blue sky as a cone of pure white rising abruptly to a sharp apex and having every appearance of being inaccessible. Somewhat less distance we made out the snow covered cone of Mt. Incaracca and farther to the left or west of Salcantay the rounded snow dome of Mt. Saray was visible. The fields along the roadside were green with new grass and fresh crops. The whole district appeared to be highly cultivated with only a bush or patch of native vegetation in waste places to give a limit of the natural flora. One of the conspicuous bushes was a yellow flowered pea resembling the Cassia. A common hedge plant was a cholla cactus, very spiny and tree like in habit like those of Mexico. The only native tree apparently in the landscape was a large leaved elder often seen near the adobe houses. A common bush was the compositeae Bucchoris. The field in places were adorned by clusters of blue iris and the golden cups of daisies. A common plant and one apparently introduced from the north, was the Indian fig cactus. Another common hedge plant of decidedly Mexican appearance was the large gray century plant or maguey used in Mexico for the manufacture of pulque but the Quichuas are ignorant of its value as a source of chicha or beer. The commonest and most conspicuous tree in the landscape was the eucalyptus, groves

of which were growing near many of the huts.

Birds were abundant along the roadside but were few in number of species. Most of them were in song and preparing to nest. The most melodious as well as the commonest species was a crested sparrow about the size and coloration of our much detested English sparrow. The song resembles that of our song sparrow somewhat but was of considerably greater length. Flocks of yellow and black ^{gold} finches, were seen in the fields. Perched upon the telegraph wire which followed the roadway I saw at intervals a fair sized brilliant emerald green humming bird which alone among the birds used the wire as a perch. A large golden flincher or woodpecker was an unexpected bird to find in this treeless region. This species lived on the ground and like our American flicker, feeding on insects captured about ant hills and clay banks. On the marshes as we approached the valley of Anta flocks of a large glossy black Ibis were seen together with white Andean gulls. As the day was warm and bright I was surprised to discover no lizards or other reptiles on the adobe walls or in the rock crevices bordering the road. Apparently lizards do not occur in the Cuzco district at so high an altitude as 11,500 feet. We travelled along for some distance on the famous Inca road which extended across the empire from Cuzco to Zuito at one time. Where we met it the paving was irregular and nursing in many places, the usual road followed during the dry season being a red earth track bordering the paving. No carts are in use here or elsewhere in the district the transport being pack mules and Indian porters. It seemed strange to pass over broad level pampas on wide roads still innocent of wheeled vehicles of any sort. The meadows were without either llamas or alpacas being devoted to horses, cattle and sheep which were doubtless more profitable.

We made camp at 5 P. M. on the edge of the Anta plain at

the base of some high hills about a league west of the pueblo of Huarecondo. The plain spread out before us was several leagues in diameter, verdant green with grass on which hares and cattle were feeding. A river ran thru the center and connected with irregular ponds of standing water scattered over the meadow.

Before ^{retiring} I set out some 36 mouse traps in the bushy edge which marked the limits of a wheat field near our camp.

April 7th. The night of the 6th was clear and quite cold but no frost occurred. In the morning Dr. Bingham continued on his journey to Ollantaytambo leaving me stationed near Huarecondo. The traps captured 12 specimens of rodents, all of them, except 2, a species of *Mus mus* similar in general appearance to our meadow mice of the genus *Microtus*. Of the 2 others, one was a small species of *Oryzomys* or rice rat and the other the cosmopolitan house mouse, *Mus Musculus* which had here reverted to a wild life in the fields in competition with the native species. The *Mus mus* produce large families, some of these caught containing as many as 8 embryos. The runways made by them were not very distinct and nowhere were there burrows such as our meadow-mice make in the meadows of the U. S. A. I was surprised to find the damp meadows without burrowing mammals of any sort. In the afternoon I again visited the traps and found 2 more *Mus mus* and one *Oryzomys*. It is evident that these species are partially diurnal.

April 8th. During clear nights there was a very heavy dew which made travel thru the grass in the early morning an exceedingly damp affair. While examining the traps on the morning of the 9th I saw a large horned owl, in size and color like our Great Horned or Cat Owl. This one had been flushed by a band of sheep from a grassy hillside. I have also seen a sparrow hawk, a marsh hawk, the Andean gull, the crested sparrow and two species of gold finches near camp. I caught several spe-

imens of a large species of *Rhipidomys* at the adobe ruins and several *Muncomys*.

April 10th. It rained nearly all night on the 10th but not heavily. At 8 A.M. it cleared. Some Indians digging brushwood on the hillside above camp captured several large mice of the genus *Rhipidomys*. These they brought to camp with several suckling young. I caught an akodon mouse today having a pure white undersurface instead of the usual drab.

April 11th. Rained again during the night but less than last night. Several Indian boys brought in broods of nesting birds to sell. Some of the birds were goldfinches others were sparrows and a few were grackle-like in appearance. This is without doubt the nesting season of many birds altho it is virtually fall. A male grosbeak I shot yesterday was a breeding bird judging by the enlarged condition of his testicles. In the afternoon some Indians brought in to camp 3 small brown snakes representing 2 species. Much of the soil from the steeper hillsides bordering the Anta Valley has been cut into deep gullies by the rain owing to its use for cultivated crops without the precaution of terracing. In looking at the Huarocondo River as it crosses the valley it presents an absolutely straight outline like a curved ditch owing to the straightened process it was subjected to by the Incas several hundred years ago to economize or gain agricultural land in the valley.

April 12th. I caught 2 more white bellied Akodons in the traps. The Indians also added a new species of rodent to the collection which they captured on the hillside. After breakfast I went hunting in the shallow ponds covering the lower part of the valley near Huarocondo. I encountered flocks of large white winged geese known locally as guallatus, also several brownish ducks the size of the crested mallards and a

species of smaller duck the size of a teal. There were a few black Ibis about and a blackish moore hen or gallinule as well as a small snipe or sandpiper. Most of the waterbirds were exceedingly wary and as the ponds were without cover no birds were obtained. In the afternoon I witnessed an unusual phenomenon. An immense waterspout which had formed during a rainstorm moved across the western end of the valley some 6 miles distant. It was in appearance a long slender column reaching from the valley floor to the clouds 2000 or 3000 feet above it and travelled at considerable speed. I watched it for a half or perhaps three quarter of an hour before it vanished. Well out in a valley about one mile from camp I found the skinned carcass of a horse which had reached a decayed and odoriferous stage but had not yet been visited by either coyotes or vultures. Later in the day I saw a single condor soaring above the carcass but the great bird did not venture to alight. Near the camp much of the roadside vegetation is undoubtedly^a introduced plants such as cholla cactus, burclover, alfalfa, yellow mustard, and other weeds. Another common introduced plant was watercress which grew thickly in all the small streams bordering the meadowland.

April 13th. Rained hard all night but cleared soon after sunrise. The mountains surrounding the valley were covered by fresh snow down to an elevation of about 12,000 feet but the snow soon dissipated it. At noon I packed up the outfit and broke camp moving down the valley into the canyon of the Huarocondo River to Chespiyoc where a rickety Indian Bridge and a few huts are situated not far from the old Inca fortress of Huata. The meadows near the pueblo of Huarocondo were flooded by the recent rains and the river issuing from the Anta plain was a turbulent brick red stream heavily loaded by sediment. Our road lay directly thru the pueblo which looked at a distance rather picturesque and cheerful with its red tiled houses, mud walls plaza and church. Within the gates however it was like

most Indian villages, a mess of filth. The narrow streets paved by rough rocks had each an open ditch of running water in the center in which filth was hoaped and pigs wallowed. The custom here prevalent of making all streets sewers and living them by high walls is as barbarous as it is ugly. The few bright spots tolerated in villages are confined to the patios of the larger residences and the plazas.

The ride down the canyon of the Huarcocondo River was interesting and refreshing. The road lay along the steep canyon side or else followed closely the stream margin on the floor of the canyon. The steep canyon sides were without cultivated crops but were uniformly grass covered. Bordering the stream was a scattered growth of small trees and bushes among which I noted the golden flowered cassia, pepper trees, willows, alders and others which were not familiar to me. Birds were abundant the commonest ones being a metallic green humming bird a black-headed grosbeak, doves a green paroquetle, a golden flicker several sparrows, etc. On the rocks a few lizards were seen, the first I had noted in Peru. The bridge of Chespiyoc was reached at 4 P. M. and we pitched camp on the river-side. At this spot the canyon was about 100 yards wide which gave space enough for the cultivation of several acres of corn wheat and potatoes. The sides of the canyon were steep but composed of alluvial deposits and were grass covered to their summits which towered 3,000 feet above us. At the river margin was a growth of willow trees and bordering the corn fields were peach and apple trees in fruit and a native tree of grayish appearance with the foliage of an olive but bearing composite flowers. Pepper trees were numerous but of small size most of them apparently having at one time been cut down for firewood and later on regenerated themselves by a second growth from the old stumps. I noticed many boulders of white marble at the roadside but I have seen nowhere rock ledges or rock formation in place.

April 14th. Rained during the night again. The 24 traps set about fields secured only 4 specimens of rodents. One of these appeared to be a new one with a very long pencillate tail, a species of *Rhipidomys* doubtless. The others were *Euneomys*. Small flocks of the green paroquettes were seen from camp. At dusk they were seen entering the vertical holes in the mud cliffs high above the river where they roosted. They were not at this season nesting judging from the small size of the testicles and ovaries of the ones we shot. The sides of the canyon at this point are composed of red adobe earth interspersed with an occasional gravel deposit but without any rock formations exposed. The canyon thus has every indication of being very recent so recent that there has not yet elapsed sufficient time to erode the adobe and gravel deposits and expose the rock formations which underlie them. The stream boulders are chiefly various colored sandstones and marbles. During the night a vampire attacked my mule on the middle of the back and next morning a telltale streak of dried blood indicated the position of the wound where the bat had fed on his blood. The altitude here is 10,000 feet and was the highest at which attacks of this sort were encountered by us.

April 15th. The night was rainless. When darkness had fallen I went down the road with the head light hunting for nocturnal mammals but shined none. On one of the adobe cliffs I shined the eye of a nightjar which glowed fire red but the bird escaped. Later a sparrow hawk charged the light and was captured by Tomes in the folds of his coat. This is the first instance of the kind I have ever experienced.

April 16th. During the night of the 16th a rodent new to the collection was trapped at the edge of a corn field beneath the tangled shrubbery clothing a stone wall. The snout of this particular rat was elongated into a distinct the short proboscis

and I later learned it was a member of the genus *Oxymycterus* a high Andean group and the only proboscis bearing rodent known. This day has been set aside for deer hunting on the high ridges above the narrow valley in which we were camped. Our host of the Chospiyoc farm assured us of the great number of deer to be found in the immediate vicinity but when the appointed day came he failed to carry out his offer to guide us to their haunts but sent a small boy instead. He evidently had little confidence in his own elaborate statement of the abundance of game. Tomas, the youthful guide, and myself departed from camp at 9 A. M. taking the trail which winds spirally up the mountain side to the village of Huispang. After climbing 1500 feet we left the trail and struck up thru old fields and terraces for the main ridge of the mountain. As we were proceeding on our way at an altitude of approximately 12,000 feet Tomas called my attention to a deer some 500 yards away descending the open grass slope in front of us. We at once fell back to a small depression out of sight and then stalked over the ridge to get another view of the deer. What was our amazement to see the animal headed our way so I waited partially concealed by the grass. When it reached within 250 yards I opened fire and dropped it by a shot thru the shoulder. No horns had been evident to our sight but we were not at all certain that their absence meant a doe. However it proved to be a female of adult size and similar in color and character of tail to the Virginia white-tail. The body was in lean condition as usual in Andean deer and the stomach contents consisted of twigs and leaves of various bushes with only a few blades of grass cropped no doubt while browsing. As we were skinning the specimen two condors appeared wheeling above us in great circles interested in the sight of venison. Tomas and the boy however carried away the entire carcass of meat leaving only the viscera for the great birds. We continued our way along the ridges but saw

no further evidence of deer so we retraced our steps toward camp. The ridge on which we were hunting held on its eastern slope the village of Huispang situated a thousand feet below the ridge. From one elevated position we could see across the narrow valley the ruins of the ancient Inca city of Huata, the walls of which were still standing on a sharp ridge which dropped away sheer a thousand feet on either side to the valley at Chospiyee. The vegetation at this altitude 12,000 feet consisted solely of grass but lower down at 12,000 feet bushes became a feature and continued on downward to the willows and pepper trees of the valleys. One of the conspicuous flowering plants was a large shrubby lupine bearing a profusion of blue flowers. The grass and bushes grew luxuriantly at this season, in places where the soil was rich growing to a height of two or three feet.

April 17th. No rain fell during the night but the day was overcast slightly. Caught an apparent house mouse in the bush with dark belly and naked tail. Two large scaly lizards were caught in traps set at base of the cliffs. I shot a white crested flycatcher which had its stomach filled with blueberries of the prickly berbery bush. Another vampire attacked my mule on the withers last night.

April 18th. River falling slowly but still red with mud. Caught a *Conepatus* skunk in the corn field. A large ^{mole} to which had a few grains of corn in its stomach. Shot 3 species of hummers to-day. One very large *Patagonagigas* one, a size of a barn swallow, another medium sized one was deep green with violet gorget. Shot 2 of the large white tailed hummers. I have seen 2 or 3 other species here besides these. Shot a dove the size and color of our turtle dove with similar pointed tail.

April 19th. Caught a long tailed small bodied mouse which looks new to the collection but caught nothing else except a lot of *Eunomys*.

I have now collected about 80 species of birds. Shot a large wren to-day and a yellow billed slate colored sparrow which are new to the collection. The Indian farmer brought in a snake *Liopis alticola* (same species as those from Huaracundo) and a lot of toads to-day. We had a thunder shower in the afternoon.

April 20th. Another *Onychomys* was trapped in the corn-field. This one was also a male and had its stomach crammed with ripe grains of corn. Caught an opossum also a large *Didelphis*. This one was a female but without young or any food in its stomach. Caught several of the long-tailed small bodied mice and also a short-tailed *Rhipidomys* like species. Shot several new birds; the long-tailed small hummer, a slate colored flycatcher and a blue grosbeak. Last night I went headlighting down the canyon as far as the next cornfield but saw no mammals. Saw 3 night jays, one of which I shot in the road a few yards from me. The others were on clay cliffs. None of the hummers show by their sexual organs that they are nesting nor do the parrots but the finches, doves and flycatchers are breeding.

April 21st. The night was very cold but no frost fell. Caught another female Opossum in the cornfield. This ~~xxxxx~~ one was nursing but had no young in her pouch. Stomach contained only a few leaves. Saw the same pair of torrent ducks on the river and shot at them both but could not discover any wounded. They refuse to fly but dive when frightened and swim down stream under water at a great pace for long distances. I know of no other bird which has this habit in such a dashing torrent as these Peruvian rivers. Failed to secure any new birds or mice to-day.

April 22nd. Caught only 4 small mice of same species as previously. Shot no new birds. A condor came down close to camp at noon but did not alight.

April 23rd. Caught only 1 mice in the traps to-day. We broke camp at 2:30 and moved in to Ollantaytambo where we arrived at 5:30.

The journey down the canyon of the Huarocampo was interesting. A stretch of 2 miles of straight walled canyon without fields or human habitation extends from the junction of Chisapang Creek to near the junction with the Urubamba River. I saw no new birds or any evidence of mammals. The Rock formation was a redish sandstone or slate. The sides of the canyon are bushy. On the floor of the canyon I saw many bushes bearing bright yellow pea like flowers on long slender leafless twigs, the spanish broom, as soon as we struck the Urubamba valley we encountered a strong breeze blowing up the valley. In the valley near the road I saw much cholla cactus on hillsides and many pepper trees. The sides of the valley are very precipitious and broken by rocky points and ledges.

April 24th. I remained in Ollantaytambo at the station sorting outfit and drying specimens. During the afternoon we had a heavy rain shower. In the garden are several wild cherry trees in fruit and also a native walnut. Saw a single bat at dusk flying about the houses.

April 25 - 26th. Continued work at the station on the arranging of outfit and the cataloging of the specimens thus far collected.

April 27th. We left Ollantaytambo with pack train and outfit in the morning for Torontoy at the head of the Urubamba canyon proper to hunt bears which are now reported to be feeding on ripe corn in the fields. I saw no new birds on my way down except a swallow and a short tailed hummer. The Scenery was fine with many views of snow clad ranges on both sides of the valley. Rock formation chiefly granites. Just on leaving Ollantaytambo I saw two of the gigantic tiard stones laying in the road where they had been left centuries ago by the Acacias, Stendobins, and pepper trees, along the road. Made camp well down the canyon at the lowest corn patch near the mouth of Torontoy Creek which has snow covered ranges at the head. Muh forest is to be seen high up on the mountain side at 9,000 - 10,000 feet.

April 28th. I went with Narciso and a small boy as guide up the mountain side to the corn-field where bears are said to come for corn. It was three-quarter of an hour's journey up the steep side toward the snow fields along the bed of a small brook. We found no sign of bears neither tracks, dung or ravaged corn so returned with the traps. Above the corn-fields was a heavy forest of small trees and tall bamboo. This forest was very moist and extended up to the snow apparently at 11,000 feet when we ascended it was perhaps 9,000 feet or 1,000 feet above Torontoy. Saw very few birds. On way back Narciso and the boy examined a bat cave which the boy knew and found a few bats and several human mummies in the distorted bent-up shape common in the Inca mummies. In the P. M. I sent Martin back to Ollantaytambo with a note to Dr. Bingham reporting the discovery of mummies. Shot a red headed warbler and saw several others in upper forest. Also shot three of the large green parrots which feed in the corn-fields. The little green parquettes were also seen. Have seen no other new birds but several night jays have been heard at dusk.

April 29th. We caught nothing in the 5 mouse traps set about the Inca walls. I went to the bat caves with Narciso in the P. M. after Tomas returned from colpani. Heard a bat or two squeak but could find none. Saw about a dozen human skulls with other bones at the cave mouth. Farther in in a small chamber were others. A condor flew close to us several times as we were ascending or climbing up the cliff. The parrots I shot yesterday had their crops filled with fresh corn.

April 30th. Caught a small Marmosa in a mouse trap at the base of the Inca wall also a young mouse. Went up to the forest at the head of the gulch above the corn patch and set 10 small traps in the moist forest. Most of trees are a thick leaved magnolia like growth with white waxy flowers. Shot a large blue jay and a black red breasted flycatcher.

May 1st. The traps set high up in the Montanya yielded a large spe-

kind of scapulae. It was uniform brown in color and was an old male with large testicles suspended by a very small peduncle. The teeth in shape and structure are very similar to those of a shrew which the animal is as far as habits are concerned. It was caught in a moist loamy forest and soon after I had been in the forest for some time I saw a large bat flying in the dusk. The stomach contained insect cases and eggs. Caught several dark *Peromyscus* very different from others secured at Maricao, also a long tailed *Oryzomys* new to the collection. At the Inca ruins I caught the very long tailed *Oryzomys* and also a large *Didelphis* in a steel trap. H. B. and Hardy came in with an outfit late in the P. M. prepared to collect the skeletons in the bat cave. A thunder shower blew up at 4 P. M.

May 2nd.

Caught 3 more scapulae in the high Montaña, one was a female but there was no evidence of a pouch. The tail does not appear prehensile as it is not smooth at the tip but slightly hairy and perfectly straight. Caught a large *Sciurus* equal in size to a house rat. H. B. and Hardy went far up the wooded creek to the base of the large glacier near the summit. They reported a good trail and I left half way up. The trail for which the trail was built are at timber line. I shot 3 new birds in the Montaña, one a large *Panulops* one vireo and 2 golden crested flycatchers?

May 3rd.

Packed mules with part of my outfit leaving tent and one chest valve at Terentoy. Three of the mules got thru O. K. but the 3 last were shoved off the trail by their apaches catching against jutting rocks. These three slide down then a steep cornfield into the creek and lost their cargoes on the way. They were cut up about the head and eyes but no limbs were broken. The men packed the loads the remaining 200 yards to the edge of the Montaña where we made camp. I visited the traps at P. M. after we were settled. Two more scapulae were caught, also a new large mouse or rat with a white belly

and ochraceous dorsal parts. Saw no birds. Caught several *Escomy's*.

May 4th. Caught 3 more *caenolestes* in the mouse traps, one of which was a female. One was alive being caught in a small trap across the back. The tail when examined was not prehensile. This one died soon after being taken out of the trap so I could not experiment with it. Caught a new mouse, a small dark bellied long tailed *Oryzomys* type. Shot 5 new birds, one a large wood hewer with white cheeks a golden backed black oriole like bird, a buff thruted hummer and Wren also a fly catching warbler with yellow underparts. Shot another penelope to-day also. Weather at night not as cold as Huarocondo or Cuzco, aneroid received from Ollantaytambo register only 8800 feet for this camp but I believe it is at least 1,000 feet low.

May 5th. Caught no new mammals to-day, but 2 more of the ochraceous bellied small mice and 2 more *caenolestes*. Saw a pair of green trogons with vermillion breasts like the Mexican species. Shot one of the slate wood-pigeons to-day from a flock of ten. Some of the birds are breeding here. The yellow bellied fly catching warbler, the wren and the white bearded creeper show this condition.

May 6th. Caught 3 more *caenolestes*, one of which was alive and in good condition so I brought in and put it into the following lantern as a cage but it got out thru the top which I had thought closed. The tail when stroked did not show any signs of being prehensile. One of the two dead ones was an apparent female but immature like the other or else a very young male. I have not yet secured an adult nursing female altho I have ~~xxxxxxx~~ taken a half dozen old males. I secured two more of the small ochraceous bellied mice. Shot a new hummer, a buff tailed and buff winged one. Saw one other this A. M. Shot also a new dark blue shrike. Moved camp to-day to the huts built by the road cutters some 3 miles above in the heart of the Montaña. Tomas came up at 10 A. M. with 4 Indian who made two trips and carried

our outfit up in about 3 hours for round trip. The camp is situated in a flat part of the valley just at its head with the glazier and snow banks above giving a magnificent view of the scenery. The sides of the valley at camp are heavily forested but very steep and rise some 2,000 feet above the floor. The creek is a quiet and level stream without cascades at camp. Most of the flat valley is covered by bamboo, 8 to 15 feet high with small trees interspread. All the trees are covered by green moss and bunches of bromeliads like pineapple plants in appearance. Saw a toucan the long billed bird evidently seen by H. B. on his trip. Saw no bear sign in the trail but the men said there was a track in the shelter of a large rock. The aneroid no registers 10,700 at this camp which is no doubt nearly correct. The lower camp it registered only 8,800 feet instead of 8300.

May 7th.

Caught chiefly *Bunomys* in the upper camp, only 1 *caenolestes* and one large ochraceous rat *Thomomys*. Caught another *caenolestes* at the lower camp and also an old female ochraceous rat *Thomomys* which contained a single large embryo. Built a trail around the rocky impassible part and sent Tomas down for the mules. I rode up the trail about 3 miles above camp but saw no bear sign. Below the camp there is no bear sign only possible trails. I have seen no tracks or dung anywhere. The country above camp as you rise is much more overgrown by Bamboo. All the forest is choked with it and thicket. Tree ferns are also seen at rare intervals, some being 15 feet high but they are always solitary. I saw the pair of Trogans to-day but did not secure any. The Montanua is purely tropical altho it here reaches snow line, the birds and mammals and plants are all from the hot zone a closely related to those and very different from the open grass land forms of the alpine Andes proper. There is not a single bird or mammal common to the two zones. They are here a matter of slope and moisture and not altitude at all. The montana is east of the Andeans.

May 8th. Caught 3 more *Caenolestes*, one of which was a nursing female and I preserved it in alcohol. No embryos however. The other 2 appeared to be females. Set the bear traps to-day, two below camp and two above but found no tracks or dung to guide me. Set them on wide but tunnel like trails in the underbrush. Several nut-like or olive like fruits lay abundantly on the floor of the forest here but I have found no evidence of any animal eating any. Found a night lizard under a rock at camp to-day which had the appearance of the Californian genus *Xantusia*. Shot a beautiful tanager, yellow below and cobalt blue above. The Indians we hired as porters to bring up our outfit came up to-day driving their cattle to the near pastures after we had fixed the trail where it was bad. This is the first time cattle have been over this trail which road recently built for the mine or prospect near the glacier above our camp.

May 9th. The four large traps captured no bear or any other game which was not a great disappointment as no sign of any canuoires has been detected by me here. Caught two more *caenolestes* one a half grown one. In the forenoon at 1 P. M. I started with Tomas for the snow fields near the crest of the mountains. We made timber-line or rather the lower snow or ice packs in the form of glaciers in $2\frac{1}{2}$ hours. The road was very steep and overgrown by tall bamboo most of the way. Half way up or about 12,000 feet the bamboo seems to predominate with the forest trees scattered thru it. It is an impenetrable mass 10 - 15 feet high. It stops altogether at about 13,000 feet, well below the forest belt which continues on to 14,000 or 15,000 feet in some places. There is no regular or level forest line, the glacier like snow fields descending far into it in places. One of the commonest trees at timber-line is a prunalety leaved tree *Adansonia ochreata* a member of the rose family and has rough shreddy bark. Some of the trees are 10 feet in diameter but these are unusual. Another common bush was a small white

flowered one with hulleberry like fruit. Above the forest zone or bordering it above the bamboo belt or heavy growth of tallish blue grass comes the ground. It is about 2 feet tall and about heavy and matted. Other species of grasses are associated with it. Flowers are surprisingly few or absent in this zone. The trees near timber-line are all draped by a heavy growth of green mosses adding several inches to their real circumference. Runways of many mice were seen in the forest and also about bushes in the grass. Some 30 traps were set on these runways. Much deer sign was seen (tracks and dungs) in the blue grass belt but no deer. No bear trails or evidence of any sort was seen. Several wren like birds were heard and seen on the zone above timber and one was shot, a wren-tit or Synallaxis with a very long tail. I also shot a carron hawk (a vulture like one with naked yellow head and coloration of a caracara which it also resembled in size.)

May 10th. Rained most of the night a soft misty rain which continued during the day. I sent Tomas down to Torontoy for the tent and the rest of the outfit. Caught ten *Eumomys* and only one *caenolestes* in the traps set down the creek. Did not visit those at snowline. Shot 3 new birds to-day; a very small green throat-ed hummer, a live flycatcher and a yellow warbler. Skinned the Carron hawk and found its stomach packed with large grubs. Saw a wood-dove to-day, a solitary ground species which I have heard hooting for some days.

May 11th. This is first day since my arrival in the montanya that I have failed to catch at least one *caenolestes*. The traps set down the creek produced two of the large *ocheaceous* rats. *Thomomys*. The Indians with Tomas and Martin came up at noon from below with the tent and other outfit. They finally agreed to go on up the mountain to snow-line with my outfit so I packed my bit and went along with Tomas. We met the Indians coming back they having deposited their loads at the top of the trail. We

reached the top at 5 P. M. and made the best camp we could in the steep side hill there being no flat places large enough even for a tent.

May 12th. The morning broke clear and cold. I visited the traps which had been set for three days and was surprised to find 4 caenolestes at timberline, some 10 euncomys and 4 specimens of a new mouse, a Oryzomys with long fluffy hair, small body and long tail. Martin came up in the early morning for the mules and worked half a day digging up a place on the side hill for the tent. Narcisse came up with some more outfit in the afternoon. During the day I heard very few birds, and saw only one or two warblers one of which I shot. El Duencyo de Torontoy says the name of this is Pampacalla.

May 13th. Went out with rifle and Tomas along the edge of the forest on the south side of the camp but saw no deer. Shot three new birds to-day; a red bellied tonager, a fly catcher like Traill's and a chestnut breasted warbler. Heard a robin in the forest but did not get sight of it. Caught 2 caenolestes in a grass meadow above camp. Sent Tomas down to bring in the trap at lower camp. He brought 4 caenolestes Oryzomys like timber line species and several Euncomys.

May 14th. We had a heavy hear frost on the grass last night the first since coming here. When we returned at 9:30 to camp we met H. B. who had come up from Torontoy to visit us with some extra food as a gift. He reported seeing 2 bears between Mount Salcantay and Matcha Picchu at edge of timberline. One he photograph at some distance and finally got within 100 yards of it. He saw many trails of bears and a cave where there were tracks. O decided to break camp and return to Ollantaytambo at once and go in search of the bears he saw. Shot 2 new birds to-day, one a speckle wood hewer and the other a gray one with a red crown. Caught 3 more caenolestes, 2 Oryzomys and several Euncomys.

May 15th. Another frosty night. Took up the trap and prepared to de-

scend to Torontoy. Caught only one caenolestes. They have chiefly been taken in the open grass country here rather than the forest. The 6 Indian porters came up at noon and we left with outfit at 1 P. M. At the two huts I found Tomas with a very large Didelphis which had sprung the lower bear trap. Shot no new birds and only saw one new one with certainty. Day clear and warm.

May 16th. Broke camp at Torontoy at noon and moved in to Ollantaytambo where we arrived at 5 P. M. Saw no new birds on the way. Everywhere the crested sparrow was common and many robins were seen hopping about the road. Soon after I arrived H. R. and Markill came in from a trip across the river to the top of the range. Markill brought in a female guanaco deer he had shot. They had seen a herd of 8 at short range but the rifle sight were damaged and only a female were secured after several shots at male with fine horns.

May 17th. Remained at Ollantaytambo skinning deer and drying specimens.

May 18th. Left Ollantaytambo at 9 A. M. for the bear country above Matchu Picchu by way of Huallabamba. Took Ward also, Tomas, 3 Indian guides and 5 pack mules. Camped first night above Zuento. Trail on south side of river very rough. Saw many birds along route, turtle-dove robins, crested sparrows, etc. Saw one short tailed eagle Geranoetus and several sparrow hawks.

May 20th. Broke camp at 9 A. M. and reached Huallabamba an hour afterward. Then we began the ascent of the Huallabamba creek crossing the stream bed or wading up it under bushes and winding about among the trees. At 1 P. M. we emerged from the tree belt and began the ascent to the pass of Huayres 13,800 feet, along a well made Inca road with a steady grade and several feet in ~~xxxx~~ width. The country here was entirely open,

grass covered. We saw no deer or other mammals however or signs of any. One of the mules fell off the trail and rolled 100 feet down the grass slope, near the summit. We finally reached the pass at 3:30. The descent on the east side was very rocky and steep. At 4 P. M. we made camp at the bottom of the Harayuro Valley at 12,000 feet altitude, across on the opposite side high up could be seen the ruins of a few stone houses, Cadrobamba where H. B. had camped a week previous. I saw a few wren and Synallaxis near the pass. At camp I shot a mere flycatcher.

May 21st.

We had a thunderstorm during the evening and this morning the mountain tops were whitened by a light fall of hail or sleet. Saw quite a large number of birds, but the floor of the valley is filled by such large rocks that hunting was dangerous to limbs. We reached the old ruins of the fort at 10:30 and then had to unpack and carry all the loads over a steep place by hand. We therefore did not reach the pass until noon or rather 1 P. M. Just below the fort there was fresh bear dung in the trail composed of blueberries which were abundant on the hill sides and just ripening. Tomas said he saw a large bear just before we reached the fort but I was a few yards behind and could not see it. At the pass I saw more bear dung but old and also some down the trail near the lake above Cadrobamba ruins. We reached Cadrobamba ruins at 4 P. M. and camped where H. B. and his party had constructed a grass hut. Shot a green heron of a different species than the common one at Hanyuro fort.

May 22nd.

Went with the Indian guide to the ruins of Ceorihueyrachina where H. B. saw the 2 bears 10 days ago. We lighted one some little way beyond just below a ridge within about 50 yards of us standing erect. I opened fire with the 22 N. P. and hit the bear twice in the side and thru the kidneys but it loped away toward the forest and I shot two more times one shot just slitting the skin on the side. It disappeared into heavy mountain-

ya forest down a steep hill. We followed but could find no bloodspoor and finally I gave up but sent the Indian on to seek for it. In 5 minutes or 10 he yelled to us that it was dead just below where we had quit. The two men brought it up to the open country. It weighed about 150 lbs. or less and was in lean condition. It was a female without embryos or milk. The stomach contained only blue berries, *Vaccinium* of which there were many ripe on the hillside. This bear was just on the main ridge and only 50 yards from the upper edge of the forest at about 1,000 feet altitude. There were no tracks or fresh dung of bears about but I saw a single lot of old dung. Apparently it is only very rarely that they leave the montana forest and then only where blue-berries are ripe. We could see the Matchu Picchu Peak and some 20 miles of open grassland but saw no other bears or any evidence of any in the trails. As the Indian was carrying the skinned body a condor came in sight and wheeled above us. Later a gray eagle appeared and drove the condor away. The trail we followed was an old Inca road well built along the cliffs often 3 feet wide and built upon a vertical wall 10 or 15 feet in some parts. Scarcely any birds were seen or heard altho the road lay thru forest and glades and a great variety of vegetation. Day open and sunny. The bear was seen at 11 A. M. in bright sunlight. No deer tracks or sign was seen and they are said not to occur here altho the grass land is extensive. Absence due to the moisture perhaps as the dryer land about Ollantaytambo supports many.

May 23rd.

We went out on the back trail to the Huacururo valley for bear where Tomas had seen one on our way into this camp. We travelled over the grassy ridges carefully but saw none, only a pile of old dung about the end of the trail. Saw many tracks or trails in the grass leading to the montana forest. Saw some deer dung in one of the tracks. Two condors flew about over us as we sat about the fort on the grassy ridge. At 11 A. M.

clouds or mist covered the country and we returned to camp. In the afternoon I went bird shooting near camp where I secured 4 of the red-bellied tanagers, one trail's flycatcher, one of the brown flycatcher and a small humming bird.

May 24th. We went to the Caerilmayrashina ruins again to-day for bear but found none or any recent evidence altho we went much farther towards Matchu Picchu peak than last trip and remained on the summit watching until 3 P. M. I sent the Indian back for the mules and he reported seeing a bear just below the ruins at the upper edge of the montana which bolted back into the forest before he could turn about all of which was apparent fabrication. I was struck to-day by the great abundance of small tree ferns at timberline bordering the grass country. The real timberline tree here is Acaena which occurs high up above the other montana trees often near the snows Mt. Salcantay was clear of clouds most of the day. The other Indian visited the rat traps in the Huayruco Pass (east) and brought back one caenolestes and one Oryzomys. These traps were placed at 13,000 feet under large boulders well above the montana. The rock formation everywhere here is gray or whitish granite. Two condors flew about us to-day as usual, one of which I shot at as it was perched on a cliff but missed it.

May 25th. Ascended the Inca trail to the Huayruco Pass but saw no bears. Set one trap above the fort on an old bear trail at the edge of the forest and another trap at the pond half way up to the pass. Caught in the rat trap only 1 oryzomys and a Synallaxis. Fernando the old Indian ascended the high peaks above camp and reported seeing viscachas and seeing deer tracks, but no bear sign. Day beautiful clear all day, until 5 P. M. when the clouds drifted up.

May 26th. Remained at camp skinning birds and small mammals. The Indian Jose visited the 8 bear traps and the rat traps in the pass but brought in only a caenolestes, a Runcomys and a slaty wren. I climbed up to the ruins of Cedrobambo and found that

U. S. party had uncovered the principal buildings from plant growth. The stone work is very crude consisting of rough stones set in clay mortar and not joined. The chief building had 6 windows facing the cliff or open side and watches on the montanya side. A dozen small rooms or so covered the remaining building. The whole affair was built on a steep promontory projecting into the valley. There was no water nearer than the creek where we were camped some 100 yards below the fort. This ruined structure of Cedra-bamba must have been simply an outlying fort for Matchu Picchu as there is no evidence here of cultivation; no traces or clear land of any sort. The fort at the pass in Huayruru valley was of the same sort apparently. Set 18 traps along the Matchu Picchu trail but caught nothing. Weather clear all day, Salcantay being unclouded. Usually the afternoon are cloudy.

May 27th. Went out for bears to-day to Coenmeyrachina ruins but saw none. Set a bear trap on the ridge just above the ruins where Tomas said he had seen one yesterday. Day clear and bright. Caught 3 caenolestes along the trail and Jose brought in a large Rhipidomys and a young Suncomys. Anderson and Maynard came to the camp in the afternoon and made camp just above mine where they expected to spend 2 weeks mopping the country.

May 28th. Went up to Huayruru again but saw no bears. Went along the ridge south of camp looking for viscachas but saw none or any signs. Saw 3 carrion hawks in a party, also several small rock finches new to me. Caught a caenolestes and 3 Suncomys in the rat traps. In the evening went up to Anderson's and Maynard's camp for dinner. Anderson said he saw many bear skins at Huico which came from the surrounding hills. His locality for coyotes is one day south of Cuzco. Caught a peculiar short tailed thrush with long legs and ochraceous in color in a rat trap a special of ant bird. Saw no other a few days ago in the forest.

May 29th.

Rained early in the evening, went out to Bear trap at Corilwagrarlino but saw no bears. Caught another shot tailed thush in the same rot trap. Shot a new golden flyciltres and a pair of speckled Siguallaxis, caught 6 caenolestes, 2Munuruys, and a Rhipidouys. One of the caenolestes was eaten much about the pevd doubtless by another caenolestes.

May 30th.

Day rainy and foggy until noon. At 10.30 while following the trail on a trap line, Tomas saw a bear on the side hill just across from the ruins and not far from camp. We hurried back and rallied after him with the rifle. We got as close as the lay of the land would permit to him as he sat on the hillside. We were across a wooded ravine about 400 yards away and he sat looking steadily in our directions and would not feed. He had evidently heard us as it was calm. I rested a long while, and then took a rest on a large boulder and fired at him but missed. He ran along the hill and I kept firing and then he ran uphill a short way. Finally he ran along the side hill and down into the forest. We traced him but found no blood spoor or could we see any evidence in his movements. of hi being hit. Tomas went furthuer on his track and found a large cave under the rocks where he lived where there was much dung. In the P.M. I went up the hill to the pass but saw no bears. I in the lower trap for the cave. Anderson and Maynard took a walk over the Notches Pic trail to the saddle of San Miguel drop but saw no bears. Maynard almost walked into the bear trap on the ridge. Shot one new bird a blue capped flycatches.

May 31st.

Went with Tomas to the bear den he discovered yesterday while trailing the bear I shot at. The den was at the side of a large rock and partly under it in dense forest but near its upper edge. A shallow form had been scooped out by the bear and several piles of rather recent dung lay near by. I sat in the trap in the form with corn. I found another form just below the ruins but it was without of dung. I believe the bears use these

temporarily as sleeping places for a few days and then move out to some other place. They don't seem to have any definite living place but move about to one part of the forest to another. All the dung I have seen has been blueberry in substance although it is not at all fresh. Perhaps the blueberry remain ripe for several months or half a year so that the season is long.

June 1st. Saw no bears to-day. Thus far none have come to any of the four traps baited with corn and various vegetables and dried apples. Day partly cloudy with little sunshine shot one of the small bicolored wrens like *syrrhaptes* similar to the one I caught in a net trap at the pass. They have a peculiar tree froglike note which is very deceptive. Shot a new wren a brown one with white shaft streaks, in appearance like a mottled goose or partridge.

June 2nd. Rained much of the morning. Caught a large *Didelphus* or opossum in a steel trap and photographed him. After skinning him Anderson came down and asked for the meat for a roast. When roasted he was very tender and delicious. Saw a bat flying about Anderson tent a duck as I was dining with him. This one had a slow flight like *Myotis*.

June 3rd. Went out this morning to the bear trap in the cave or large rock but it had not been disturbed. Flushed another large woodcock in long grass near acrok. Fernando flushed a *Tyrannus* on grassy side hill which flew up with loud cries. Shot a pair of crested mallards on the pond above camp.

June 4th. Took a trip to Notches Picchu saddle but saw no bears about Corihuyra china could look down on Notches Picchu ruins, but could see only the walls with a good glass the rest been overgrown by trees. San Miguel bridge was in sight below us. and the river as well for a good distance. Above the bridge it is quiet water with sand beaches while below there are rocky rapids and large boulders. Saw a species of large green in forest also a large blue hummer and several condors below us whirling over the Intinuatana Huts at the base of the trail. Day beautifully clear and warm not a cloud.

appeared over Mt Salcartay until 2p.m.

- June 5th I climbed up to the pass above Puncaraccay Ruins but saw no bear. Hunted birds shot a of the slaty finch, the is light streaked like carpodacus Californians. Shot two species fork wrens having habits and appearance of horned larks Shot two orange throated simallaxis all above timber line in which the region they are confined. Saw 2 carrion hawks also in afternoon shot a black chinned hummer near camp. Day clear and bright all day without clouds.
- June 6th. Shot a gray chatterer and a yellow fronted flycatcher which were new birds to me. Day clear and bright.
- June 7th. At a.m. moved camp to Georihingrachina so I went over ahead of them and changed the bear trap to the place where I shot the bear. Saw many black swallows, one of which I shot after many failures. Saw two white throated swifts also. Day partly clear went skinning at night near camp but saw nothing the loud voiced bird was heard but not seen. It is probably a new species of owl.
- June 8th The Indians reported seeing viscachas above the Laguva in the rocks so I went up this evening and set some traps. They said they had seen three sitting together on top of a large rock early in the morning. Caught a small yellow Dripanys for the first time near camp. Shot a large green hummers and a large brown flycatcher which were new birds. Day chiefly cloudy but without mist.
- June 9th Day rainy and foggy but cleared at dusk, went out shining up the trail to the viscachas rocks but saw nothing. The Indians assert they do not come out at night. Caught a caecrolestes by the feet in a steel trap which I kept alive in the lantern to photograph but it died during the night having tied itself in the threads of tow put in for nest.
- June 10th Went viscachas hunting in the early morning but saw none. Shot a deer with the 22 automatic which we flushed from a tongue of forest above the laguva as his deer ran down hill and then returned up the trees and passed us at 150 yds. I hit him 8 or 10 times breaking his back at the loins with one wit of the

last shots. He a buck with shed horns and milk molars still in use Stomach contents leaves of a bush, a vetch and and a small tue; no grass condition of body lean. At 2.30 Fernando reported a bear below the Cedrobanbo Ruins so I sent Tomas to verify as the Indian is a colossal liar. He reported a bear and I with Maynard Tomas and Fernando set out after him. The bear was feeding in the open grass country just below an island of trees. The day was partly cloudy. He moved about very little so when we arrived near him he was still where we had first seen him. He however had stopped feeding and for long intervals looking in our direction but he did not see us but may have heard us. By wriggling thus the grass when he was feeding I managed with Tomas to get within forty yards of him nowhere in sight. Soon he appeared on a rock looking at us and I shot at him full in the chest with the 22 high power. He fell off the rock when he again appeared 150 yds away on the other side of a small ravine. I shot at him several times more but nothing seemed to take effect and he finally loped off over the ridge on the old wood to the next outlay. We examined his tail and found spots of blood so we were sure the first shot took effect. Some of the men from the ruins saw him go over the ridge and they came over and hunted for the trail but it was dark in an half hour so we failed to find him. He appeared to be a fine large twice the size of the shot are without any white on face a throat, nose broomlike our Am black bear bear.

June 11th The two Indians and Tomas spent the morning and put off the afternoon looking for the bear's trail where he was seen last crossing the ridge into the next valley. They found nothing however only old trails and some dung. Went up to the Taguva Where I shot a blue warbler and a greyish hummer new to the collection. Caught another large opossum to-day. Weather clear and bright all day.

June 12th Moved camp a half mile to the Paupas where there is a fine view of all the bear country lying south-west of Cedrobanbo

Ruins caught no vischochas in the traps set above the l
laguva.

June 13th Day beautifully clear. Watched for bear all day from camp but saw none. Shot a red bellied wood-beaver near camp on on the trunk of a acacna tree. I have seen this species before but did not recognize it as an alpine or alone timber line bird. Sent Narcisso down to Intihuatoua with a letter for H.C.

June 14th Saw no bears; morning clear and cold; evening every night that is clear we have a hear first with their ice on a standing water. Caught another of the oche short tailed cut birds in a rat trap to-day. Shot a new wood-beaver having a white head and nest. Counted up the birds to-day and find I have 80 species and 180 specimens. Most of them are flycatches wrens and warblers and hummers. Each camp has distinct species about it. The bird found of Peru must be really immense owing to the dissected character of the topography.

June 15th Watched all day with field glass for bears but saw none. Day clear and bright all day which I believe is less favorably than cloudy or rainy weather for bears. Tomas and Narcisso brought in the bear traps and rat traps from the Buncaraccay Ruins but caught nothing in there to-day. Indians returned at dusk from assisting and Maynard to San Miguel.

June 16th Left at 10.30 for the Dmubsuba Valley Took up bear trap at Georihuagrachina on the way. Day clear and warm, Saw no mounds. At Georihuagrachina saw a sharp shined hawks and a few large steel blue hummers. Shot a lark wren and a stripped linnit or finch. Lost the trail at the saddle of Watchu Picchu and fell behind the pack train. Trail from saddle down good and safe, much better than Huayruro or Cedrobanbo pass region. Saw the crested sparrow and a few rock lizards well up top 10,000 feet altitude Saw a trio of brown guano or Hualala. Reached IntihualtanaImts at 5.30 and found canop pitched.

- June 17th. Moved camp in the morning to a little beyond San Miguel bridge in a pleasant green spot away from the road. Saw many birds many of them new to the collection. At dusk I saw many bats about camp flying light and swift in appearance they were like a free tailed Mollossus form of some sort. Several of the mules came in this morning with large blood blotches on their withers and necks. Richarts who lives at the bridges and cultivates fields above at Notches Picchu reported seeing a bear almost daily at his cornfield, also an owl at his house which had stolen chickens.
- June 18th Shot a great many new birds to-day at Richarts ranch on the river edge. Eleven new ones to-day and 2 yesterday most of these were flycatches. There were two hummers and 2 Vireos. Shot 2 specimens of barbels also, caught 2 large neotomys rats in the forest and under boulders bordering the river. At dusk shot one of the large Mollors or free tailed bats. There is a smaller variety but could not hit one. All these bats fly with great speed and have used many shells to get the first one. Day clear and warm like yesterday.
- June 19th Sent Tomas and Jose up to the ruins of Notches Picchu with a bear trap which they set in the corn field where Richart has seen the bears. They reported some tracks and dung. The Indian who is living there said that no bears had been seen but there was a with yg and a male in the vicinity a few months ago. I shot several new birds to-day including the large andean gull, a white crowned robin and a blue and yellow warbler. Richart brought in a green jay from the Notches Picchu trail. Day clear and warm. No mounds secured in the traps.
- June 20th No mounds secured. Shot 5 new birds this morning in an hour. One was a peculiar mint yellow bird with a broad snapper - duck bill the tody tyrat flycatcher. Another was a white throated finch a blue headed finch and a rufous winged Syerallaxis. Day clear and warm. Remained in camp nearly all day skinning birds making a total of 25 skins for the day but I had to quit with some 8 or 10 left to do.

- June 21st. Shot 7 new birds to-day. Maynard came down from Notches Picchu saddle where he is trail cutting with letters and news
- June 22nd. Five new birds were collected to-day but no mounds.
- June 23rd Day partly rained from noon to sunshine sunset. Lot shot a new robin flycatcher, warbler and swallow. Saw 2 species of hawk and a wood dove.
- June 24th Rained steadily all night and day a soft quiet rain or mist. Bird shooting not possible owing to dampness. Caught a large opossum and a large old shunk at Richarts across the river This animal doubtless represents the "wild cat" which killed his chickens, caught five rats of genus Nectomys in the garden. Maynard came down from Notches Picchu saddle reported finding a good trail in the city on last side of mountain which he has cleared halfway. He has also found walls of an old village in saddle in dense forest. Very few pack trains travelled on the road to-day owing to the rain.
- June 25th Rained most of the night and morning but afternoon was partly dry. Caught 2 opossums at Richarts and a few rats. Shot a new streaked warbler and a green broked tanazer or calliste of small size. A boy brought in a large very heavy beaked finch like a giant grosberk. Narcisso returned late from O Ollantaylambo having made the down trip in one day.
- June 26th Day partly rainy. Maynard came down and camped at noon. Shot 5 of the little green parakeets from a flock of twenty which was the first I have seen here,
- June 27th Went fishing in a hole or eddy just above the bridge but caught nothing. Stream was too swift to allow the net to sink properly. Shot two Mollosus bats as well as another large one at dusk.
- June 28th Went down the road bird shooting and secured a new black warbler and a new recuroed hillied wood beaver of the usual rufous odor. Weather bright and dry again.
- June 29th Husbrouch and Ford came in from Pucywra at noon on the way to Ollantaylambo. Shot a new pigging wood pecker and a green hummer also a wood dove to-day at Intihuatana.

- June 30th ^{June} Jose reported one of our mule on the mountain side above Intihuatana with broken leg so I went down to investigate Found the large Pulvorus mule with hind leg broken just above back so I had to shoot him. The accident was thought to be a fall on the hillside but no evidence of how it occurred was available.
- June 31st Maynard left with Hasy and Ford for Ollan at noon. Yesterday I shot 3 black anis, a new giant kingbird and a new green tanager or callistes at Intihuatana.
- July 1st Remained in camp all day cataloging mounds and drying floor tent. Tomas was and Fernando climbed up to Notches Picchu and set traps for rats.
- July 3rd. This morning the large brown mule was brought in with his head much swelled and blood dripping from his nostrils. The men said he was snake bit on the nose. I lanced two small blood spots on his nose. He ate corn and seemed in no great pain. I shot a new bellied tanager. Weather clear and warm. The effect on the Mule of the makenenour in the afternoon and evening was labored breathing due somewhat to blood in nostrils and restlessness. i.e. lying down and then rolling and then rising again. In the afternoon Tomas and Fernando returned from M. P. with 2 Euneomys and usual Oryzomys.
- July 4th The mule was still alive and breathing heavily with a little blood still flowing from the nose and mouth. He moved about 100 yds in the night at 4P.M. he became restless and walked a about finally lying down and dying near the camp. He did not however at any time go into convulsions or show much distress His breathing was labored and blood flowed from his mouth in small drips constantly and he took no food. From the time he was bit to his death was at least 38 hours. Tomas brought down another Euneomys from M. P. Shot a large Mollassus at dusk.
- July 5th Rained all night a quiet down pour At noon Martin and Husco come in on way to Sarts. to cook a dog found one of the river edgebats. I shot last night Ithras a brown Saccopteryx and I rescued it from him. T & F caught several Euneomys a

small *Oryzomys* at Notches Picchu.

July 6

Rained again during the night. Went out shining with the ~~big~~ light but saw nothing except a few bats and the rat on the limb of a tree. in the forest which scampered away before I got into action. T & F brought new rat and a white bellied medium sized *Oryzomys* from Notches Picchu. In the afternoon I shot a white Beaded water oryzal at the bridge and a long tailed rufours cuckoo in the forest.

July 7th

At noon H. B. and Morkill came down from Notches Picchu saddle and camped. On his way back from Pucyiora H. B. went over ground and over snow ranges and saw in a pass near the small lake Yanacocha many vizcachas 4 of which he shot with a 22 automatic rifle lost saved only the skin. He saw them at mid-day sitting quietly on gray granite which they closely resemble in color. He saw no bear or deer either although he looked especially for such evidence of big game. Caught in the rat traps one of the large *Rhipidomys* seen at night on a tree trunk near the road. Rained during the night. Morkill shot at several cardors near the dead mule of I looked at Intihuatana but I could see none with field spurs in the morning.

July 8th.

H. B. and party left early for Ollantaytambo I went down to Intihuatana to shoot condors but day was rainy and none came near. The owner of Intihualtana said they only come to feed in bright weather. Went down to trail to Abanula River and below to a foot bridge across Umbamba River. On the way back I shot an orange red cock of the rocks. He was accompanied by a which was bright rufours red but she escaped as I fired only a light load at her. Stomach of the had 2 coffee berries only. In the afternoon I shot near the bridge in the forest a new blue tananger with rufurs nape and white bellied also 4 yellow bearded olive tanzers which were in a flock of a dozen birds. Shot another white beaded orzel in the sand bar. opposite camp. Caught another large *Rhipidomys* on the tree where we saw the others. at night. Saw on trail a herd of 10 loaded which came up from

the low country. It is unusual to meet them so low down as this. They are the first I have seen here.

July 9th. Day clear and warm so went out to mule's body above Intihuatana for condors. None were there and an examination mule showed it to be filled by maggots and still covered by partly dried bones. The condors had not touched it; It was too much maggot eaten to suit them. Caught another tree rat at the base of tree where we saw one at night. Shot a new white breasted, crested warbler to-day. Cook and Gilbert came in at 3 p. m. and camped an old place near the hut. Saw a tinamon on the hillside near the dead mule. This bird flew up with a loud cackle. Also saw the ^ggiantic white throated swift and a large dusky swallow on the hillside.

July 10th Broke camp at 12 noon and journeyed 4 leagues up the valley to a fine camp at Santo Rita 12 leagues below Torontu. The valley here is wide and level and sandy without rocks. Saw ~~sa~~ many birds but they were all like those shot at San Miguel. This place is doubtless there upper limit. Saw at dusk both species of Mollus bats. At Manda Pampa and Maguna are many large forest trees, the largest I have seen here. Day clear and warm; at dusk yesterday At San Miguel Morcos brought in a live Sampropeltic snake which he caught in his bed. This species resembles the color the venomous coral snake but is harmless. The head was very distinct but small and the snake but 15 inches long.

July 11th We broke camp at 8. 30 and reached Ollantaytambo at 3.30p. m. Day clear and warm. Some fresh snow seen on peaks above Ollantaytambo.

July 12th Caught Myotis but inside the house at 9 p.m. Set traps in the work-room and caught 11 Murs musculors in a short time. They look lighter than the U.S.A. specimens and many of them were effected with large bots on their ears similiar to those seen on mice at San Miguel Bridge.

July 13-15th Remained at Ollantaytambo drying and packing specimens.

July 16th: We left Ollantaytambo with the pack at fit. Narcisso, Tomas, Jose and an Indian boy for the pass leading to Occobambo Valley. Started at 10.30 and arrived at the near summit where we camped at 4.p.m. Sent mules back with Luis. The Valley was dry and without forest the whole way to the summit. In some places considerable bunch and along the stream is a struggling fringe of alders and Escallomina trees. The vegetation and birds are Andean and Cuzconian. Our camp was placed well above Timberline or bush growth. The whole country here is rolling prairie covered by a heavy growth of bunch grass. The elevation by the was 12,400 ft. The peaks rise about 2,000 to 3,000 ft higher but are only covered by new snow and are without glaciers. A considerable lot of villages occur in the all the valleys. Potatoes are the only vegetable crop but sheep, llamas and alpacas are the chief outputs here. At night it is cold, very cold, the side of the streams being lined with ice. and inside the tent water freezes solid.

July 17th I set out trap near camp last night and caught many Euneomys (a small yellow form new to me) one Oxymycterus at dusk. and 4 during the day. They are evidently a large Rhipidomys rat and a short eared white bellied species of apodora new to me, as soon, as it got warm I went up one of the side valleys viscacha hunting with an Indian guide and my camp followers. We found two colonies and shot four viscachos all told 5 others. Altogether we saw about 30 of them, they were exceedingly tame and one could walk in plain sight within 60 yds. They spent most of their time sitting on large boulders below which were their burrows. They are sociable and these colonies had about 15 in each. They were out all day; I only saw two feeding on grassy slopes. Saw a pair playing about chasing one another. One of the colonies was in the rocks at the side of a coral where sheep and llamas

are kept but theis did not disturb the viscasha. After shoot-
one by sitting ^{still} of some distance the others came out again
and could be shot at when they again became frightened.

Stomach contents green substance, grass and herbs. Two were
and each contained an embryo size of walnut. The elevation
was about 14,000 ft. with fresh snow lying about in shady
spots. A large lazoon was near once of the colonies. In the
meadows I saw pairs of the large geese quallata also saw some
wild ducks on the legion no condors seen but carrion, hawks w
were common, also lark wrens finches, about 15 species
of birds seen. Day clear and bright but cool like yesterday.
No bush or bushes seen only grass covered hills.

July 18th Remained in camp all day skinning rodents and viscashos but
weather so cold that were fingers were quite numb. Day clear
and warm No biting flies or blow flies occur at this alltitude
Caught no more of the probomis nosed Oxymptreus.

July 19th Went deer hunting up the valley up to the pass head of pass
and down along upper edge of Occobamba valley. We saw no
deer or signs of any country open and grassy up to summit.
On the meadows were many Guallata geese, and red headed ibis
placers etc. Saw no rocks a place suitable for viscashoa.
Looking down Occabamba valley we saw much forest but soon
misty clouds covered everything and drove us back to camp
where we carried at 3 p.m. The bug had been up on a
visit but returned at 1 p.m. without seeing us. I saw many
herds of long baired alpacacas but neither parent or yg gave
any cries at any time. Apparently they are mute only capable
to mitting and hissing sneeze. Hair or neck of adults a
large muff.

July 20th Remained in camp skinning and birds and rodents. Day partly cl
cloudy. Tomas brought in a new long tailed yellow mouse.

July 21st Rained part of the day which made it warmer than usual.
Another new rat was caught to-day, a large eared long tailed
gray Rhipidomys . I have now collected 6 species of small
rodents excluding the viscasho from this camp. All appear new
species to the collection. The rodents seem not to be breeding

now, only are a two of the short-tailed Rhipidomys and the red nosed akodon have had embryos and very few miniture have been secured in the traps. Marcos came up this morning to with mules to move camp.

July 22nd. Rained or sleeted most of the night but stopped about 8 p.m. so we packed up and started for the Occobamba Valley. After a half hours travel it began to snow and all the way there we had a driving snow stormed our face. At the pass the ground was covered by new snow. The aneroid registered 13,800 ft the pass ^{marked} was werked by a small rock hut and a wall of horse and mule skulls. In two hours travel we passed out ~~of~~ the snow.storm into rain and mist which obscured the landscape. The country for about 5 miles below the pass was open and gr assy like the Ollantaytambo side with many appacacas, llamas sheep and some potatoes fields. At about 11,000 ft blue berry bushes were seen with other small woody plants, one of which was a large fruited black-berry. We made camp at first bait in the valley of the Occobamba where it is joined by a large stream from the north at a place called Tocopuquen at an elevation of 9,100 feet The Occabamba valley comes down in very narrow and solid vantage forest and the road runs high along one side of the valley is a canyon without a floor wide enough for a good road. Where we are camped it is diversified the southoids being very open and grassy and the north a solid montanya forest.

July 23rd Day misty with showers of rain. Went deer hunting in late afterndoon above road but saw none only tracks where yesterday at sunset I saw a deer a few yards from the road at same place but it was foggy I could not get a sight of it after dismounting. A large wood pigeon like our band-tailed occurs here is flock of 30-50 feeding in the myrtle trees or cherries

July 24th Night clear with hoar frost. Caught several euneomys (yellow) same as in the pass and a dark long tailed are the color ~~of~~ of Toronto species, also one long tailed Rhipidomys same as the two from the pass.

July 25th No mice or mounds caught except one euneomys so went deer hunting above camp on high grass covered range at about

12,000 ft. Saw only one deer and that when we were re-
turning feeding below in an old field enclosed by a bush
fence. Shot this one in the stomach at close ranging cutting
cutting open stomach belly as I could not see the shoulders
or head through the bush. It was a fine buck with horns in the
velvet strangely enough. The horns had the shape of those of
Americian white-tailed deer with four points on each side. I
saw a single condor and a jack snipe or wood-cock in one of
the ~~apine~~ alpine ponds. Saw very few small birds. Well above
the nontanya timberline I saw a few of the isolated forests
of Senecive or trees Synopys but no acaena trees seen in the
region.

July 26th Caught one of the large yellow rats in the Nontanya like
Toronto species Thomosomys also a little yellow Oryzomys and
a dark euneomys. The deer shot yesterday was a good adult of
the genius Odocoileus. The road we followed up the crest of
the mountain was a wide stoned flagged affair evidently on
even road. In many places on the ancient stones wall
and terraces used perhaps a 1,000 years ago. The whole flat
area about camp 4 ocopoqueyn is terraced by stone walls. This
part of the Occobamba must have at one time supported a heavy
population. The stone works is rough natural boulders like
those in use to-day by the inhabitants for house walls and-
eo corals for stock.

July 27th Caught a caemolistes in the nontamys a adult also a new
ant-bird similiar to the staty one of Cedrobamba also taken
in a mouse trap. Shot a pair of the crested flycatcheing
warblers first collected at San Miguel. Day clear and bright.
Tomas brought in three of a Gerrhiustes like alive lizards
which he caught in rat traps set in the fields.

July 28th Caught no new mounds to-day; shot 4 new birds a blue warbler
grey flycatcher a yellow black crowned tanazer and a very
similiar small species with only forehead black. Saw a pair
of torrent ducks one of which was a large boulder 10 yards from
the stream. The men built a Thorn hedge about camp to-day to
keep out the cattle which come every night and noise about the
tents for salt. Day clear and warm with several grass fires

on the valley slopes which gave the atmosphere a smoky hue. The large trees in the Montaña are alders which are bare of leaves but coveredly catkins. They evidently are another species distinct from the smaller green one growing on Andena the creek I have not seen them elsewhere.

July 29th Caught 2 new rodents one small edition of the large neotomys and the other a large yellow Oryzomys similar to the ones caught above Toronto but having ears larger but body size less Caught another caemolestes a large Saw 2 deer and a

in forest on hillside. Deer live low down here in dry side of valley in bush and forest far covered. Rained P.M.

July 30th Went out shining last night down the lower trail where we saw the deer but saw nothing. Tried the fields near the camp also but without results. Tomas caught a Conepatus in a steel trap and shot the which remained nearby. Another one ran away also caught 2 new rodents near the small creek at camp. Both are buffy forms with long tails and small bodies and cooped molars teeth like oryzomys and its kindred generx. Caught 6 caemolestes, 3 of them but none with milk glands or embryos although one had what appeared to be pertual glands like milk glands. Shot a pair of peculiar torrent ducks in the river. Both had spurs on the wings these of the being the larger. Marcos came to camp at 3 p.m. with the park mules from Ollantaytamba Shot a new gray sharp bellied warbler and caught another golden ant-bird in a rat trap.

July 31st Had the traps brought in preparation to moving camp back to Ollantaytamba but caught so many new things that I decided to stick another day and set the traps out again. In the Montaña I caught a fine adult peromys in a rat trap which broke the back part of the skull. They are apparently very rare. I caught also a fine adult black opossum which is new to the collection. A large species of ant-bird was also caught which had the golden color of the smaller one with a white throat and belly. caught 3 more caemolestes and another small eared Oryzomys also another golden ant-bird and a slaty ant-bird both in rat traps. I have seen neither of these birds in

going the traps round yet I have caught six of them. They are terrific shulkers and yet are common to get caught so often in traps. Day clear and warm with a few clouds in the late of afternoon.

August 1st Another red letter day; caught another *Peromyscus* but skull was badly broken by the large rat trap. Tomas caught a fine large coyote and another *Conepatus* I shot a new tanazer and caught a new blackish ant-bird in a rat trap. Shot another sharp bellied gray warbler also a blue and chestnut warbler also one of the large golden bellied blue backed tanazer shot first at Toronto. Rained a little late in the afternoon. This laubly lacks flycatchers and humming birds, and owls and hawks and is quite peculiar. The nomtanya here runs almost to the head of the creek to an alltitude of 11,000 ft at least while in the Umbamba it stops at Toronto at 8,500 on the Aspiunac mush lower still. This is due to the greater length of the valleys the heights reached by the forest of the Amazon being in diverse proportion to the length of the valley within the central Andean day area or plateau region.

August 2nd I caught no more *Peromyscus* or large carmoora in the steel traps so broke camp at noon and moved over-~~to~~ the old pass ~~at~~ to the old camp at Pantocancha. Caught two more of the large white bellied ant-birds in rat traps set on runways in the Nomtanya. On the way over the pass I saw several turkey vultures or similiar species these the Indians call weetree in distinction to the condor. Saw many carrion hawks nera the pass, in places a dozen or more seen feeding on the grassy plains. A brown bizzard hawk like swamisons was associated with these. Shot a large yellow flicker from a flock of several in the park pass, also one of the white tailed flycatchers seen at Cedrobamba. Several of these latter were seen in the high country. Tomas shot himself in the foot with a 22 auto while carrying it on his horse.

August 3rd Sent outfit with arrieros to Ollantaytamba while I went with Jose and Indian boy for Viscashos to lagoon where we shot four a week ago. Shot 3 at first village 4 at lagoon and 2 others

higher up. Saw only a few large ones, most of the specimens were miniature. None of the contained embryos. Took photos of dead viscachos and rock villages where they live. Saw only two pairs of guallata geese and failed to shoot any. Reached Ollantaybambo at 7.30 in darkness and found an English missionary and an American from Pennsylvania visitors. Husbrouck, Maynard and Erdos were only members at the station. Saw on way down at dusk a night hawk or poor will in the road several times.

August 4-6 Remained at the station skinning vicachos and birds and packing up specimens.

August 7 An Indian brought in a weasel in the flesh which he had killed as it emerged from a hole in a stone house. The head was badly smashed. Rained ~~te~~ yesterday and to-day in showers most of the time .

August 8 Went out shooting above with M & H at 3 p.m. to Pin. at the mouth of Particalla Valley shot a Tinamon on a bushy hillside where I saw two others. They were solitary and like quail refused to fly except when shot at. A large white shouldered wood pigeon was shot also.

August 9 Went out deer shooting across the valley and up a small creek to the divide looking down on Silque creek where Morkill shot a guend deer from a herd of nine. We followed an old Inca water ditch or asequia which runs high above the valley along the face of black shale cliffs. I saw two guanacs of lying down far below us. The ran and I shot at the he stood some 300 yards away. Finally I hit him and he moved some few yards away and then stood behind a rock only his head visible. Through glasses I could see his horns distinctly. They were of the single simple forked 2 pointed typical of guanacs and without any brow-tine. We tried to stalk down on him but the place was a sheer cliff and we could not see below us. Finally we hearder most and saw afterwards a deer far below us running along the side-hill. We found no more deer or any tracks or dung in any other place. The ridge has an old fort and field on it with many terraces or Andenes below it. The altitude is about 12,500 ft and the bird life is like that of the Occabamba Pass.

Shot a new small dove with gray breast and black tail; also one of the alpine flycatchers gray with red crown patch like those of the Occabamba Pass. Saw several condors but none came close. At base of trail near Urubamba river saw a flock of red fronted parrots which is the highest point in the valley I have seen there.

August 11 Went down to Piri for Tim in the morning. Shot one and saw others in the cattle corral. This one ran into bush at hillside of corral and later saw it again in the cactus near the road but I could not get a clear shot at it. The one I got I shot after getting within a few yards of it. in bush country. It was so close that I waited till it ran some distance so it would not be mutilated. Shot four of the large wood pigeons, called torcacas. They were all one with enlarged breeding testicles. Turtle doves were in large flocks shot 19 in the corn stubble fields. The tenenoms had marison its crop had pacay beans in theirs.

August 14th We left Ollantaytamba for the Yuvisu Rubber finca of Alvin Peerg. Took 7 pack mules and 8 extra with empty boxes for sherds at Pucyura. Ford accompanied me to San Miguel Bridge. First day we reached Naquina late at dusk and camped at the hut. It rained during the night. On the way down it was clear and warm. Just below Toronto in the canyon I noticed several yew (podocarpus) trees growing close to the road side which are the first I have seen. Farther down I saw several of the large yellow alder seen at Cocopoqueya in the Occabamba Valley.

August 15 Weather rain during the morning but at 10 a.m. it cleared and we left for Santa Roser just above San Miguel a half league in ponds. I saw quite a few small fish. At mouth of these ponds were fish traps made of cane twigs with a basket in the bottom for trapping the fish. Above the traps were four poles set so as to cross above like handles. At San Miguel I left Marcos and Lewis with extra mulesto bring down the boxes left at Notches Picchu ruins. On the way down the canyon I saw a flock of red fronted green parrots feeding in blossoms of Erythrina trees. Saw no new birds although the road was deserted it

being Sunday. After leaving the canyon at Calpain Bridge the character of the country changes radically. The granite rocks cease here as does the Montanya forest. Below Calpain all the way down the valley the mountain sides are bare of trees and are grass covered with a few patches of trees near the river only. This may be due to constant ⁿburning but it is so complete that the change in rock formation no doubt accounts for it. The canyon throughout is granite only shale and conglomerates with grass covered. Saw many fish traps below Calpur where the river increases 100% in volume due to entrance of large streams such as Rio Salcantay. Below Colpain the trees are quite different in genera from those growing in the canyon. Most of them are covered by long streamers of Spanish moss Bromelita and look gray in ^aappearance. Their own polliage having little color effect. Shot a large spotted lizard on the road side. Near Zuillivayn saw a medium sized blue Heron in the river. The small birds seen along the road were the same species I got at San Miguel. We reached Santa Rosa at 5.30 p.m. and camped near the ranch house.

August 16th Night warm and clear left Santa Rosa at 8 a.m. reached mouth of Vilcabamba River at 10 and then travelled up to the Paltaybamba where we arrived at 2.30 p.m. The chief tree along the road and riverside is a tall spidery a Piptadenia. Below Santa Rosa the large festoons of Spanish moss were not seen but a short moss like species which covered the limbs of trees took its place. At Colpan we saw the first black vultures and they continued to Paltaybamba. A conspicuous bird was a green billed yellow tailed Oriolea cassique colonies of long pendant nests of which were seen suspended from trees near the road. The aneroid gave 5,100 ft for Paltaybamba. The finca consisted of sugar cane and a factory for making sugar and aguardiente Sr. Oliart the Administrador says monkeys are only found a long distance from the finca in the higher forest where the two species occur, a small gray one and a large species black. He showed me a large black currow domesticated which lives in the patio and cave from ^{Yuvini} the Rubber finca.

August 17th Remained all day at Paltabamba at noon Marcos and Lewis came in with the boxes from Hothches Picchu. I tried to shoot bats at sunset as they flew from the tiled roof of the factory but they left at a terrific pace. Most of the flew like Molossus but appeared little gray in color. Oliart said that near Pucyura there is an old wineshaft haunted by bats. He gave me a letter to the govenrndor so I could get a guide to the cave to-morrow. He said below the finca there was another mine or cave frequented by bats. He also showed me a large wood pecker size and color of our log cock which was shot on the finca.

August 18th Jose caught in the cane fields 11 mice of 3 species 9 of them were euneomys in color and a large ^{Orzynomys} other in color and smaller yellow Orzynomys Broke camp at 8.15 and moved up to Lucma. On our way we passed through many forest patches but saw no minkeys or large birds. The green jay and the olive cassique were common birds. When near Lucma saw many small birds of warbler type some of which were new to me. Shot a new sized medium golden yellow woodpecker and a rufous wood beaver. It rained hard for our hour at 2 p. m. just before we reached Lucma At Lucma we found the inhabitants all away at Pucyru attending a festival. The village is situated in a sloping wide valley with montans on both sides but no really heavy forests.

August 19th Remained at Lucma waiting for guide fro Yuvini but none came on account of the fiesta at Puquiura. Spent the afternoon visiting the bat cave in the old mine tunnel which Oliart told me about. The bats were near the mouth some 15 feet inside hanging to the clusters to the roof. Beneath there was a foot in depth a bloody mine composed of bat dung. But it was pasty and our feet sunk into it to the bottom. I shot half dozen and then caught 5 others the rest retired farther in the tunnel but we could not follow as the mine was too deep. The bats were all of one sort, Desmoder the blood sucking vampire and were very large and much larger than the Mexican race. Both sexes were collected the were much larger. It did not rain in the afternoon but it clouded it up as if it would

Pucyru is some 9,500 ft in altitude which is close to the upper limit of the blood sucking bats. I saw black vultures as high as Pucyru where they were common.--At the Altho Lucma and Pucyru are at the same altitude as Ollantaytamba they are formally much lower and practically nontayms zone. They have much rainfall and are with forest clinging to both sides of the valley.

August 20th Jose caught 3 mice last night at Lucma; one euneomys and 2 long tailed Oryzomys of small size. Left Lucma at 8.30. for San Miguel. The road mound up to the side of the first stream from the west entering the Vilcabamba below Lucma, the hill was heavily forested but the trees were small with the foliage general appearance of the line oaks. Many tall tree ferns were seen at the front also some bamboo. At the crest of the ridge at about 12,000 feet perhaps the forest gave way to the heavy bunch grass of the high country. On the summit the country was rolling grass downs without cliffs or forest. Just over the summit in some wet meadows we saw a pair of Guallato geese and several flocks of large ^{hawks} plavers also carrion banks and one brown lizzard We made camp 3 hours down from the summit in a scattered nontanyms of small trees and bamboos on a clear creek where a road hut had been erected. Abundant grass pasturage for mules grew everywhere here. Altitude of of camp Corrangwaya just 10,000 ft. I did not have the aneroid out at the summit but should say the crest was not much over 12,000 ft as the drop down to the camp at 10,000 is not sharp. The Idua pass is marked 14,800 ft could be seen but looked very little higher than the San Miguel pass There are no snow packs nearby and it is doubtless much under 14,000 ft in altitude. The guide said the name of our camp is Corrahaguaya. After we had camped Berge Rubber pack outfit came from Pucyru and camped with us. From 4 p. m. to 6 we were bitten much by a minute fly size of a pin point and gray in ~~adder~~ color They were desimous.

August 21st Caught four dark brown Oryzomys like the species first taken at Occambamba valley but richer in color. Broke camp early

Day clear and warm. The road crossed over after 2 miles to another valley and then to a forested ridge which we followed for a league, then it dropped steeply down then more forest for another league, to the San Miguel River. Here we struck heavy forest of large trees and a fine wide ^{road} weed-cut which descended gradually. Saw only a few birds and no mounds. Followed the river for 3 leagues to a hut and clearing called San Fernando where we camped at 2.30. The owner had a tame Pavahil currosow and a black wood-pecker and a large green parrot, also a family of four children. The vegetation along the way was for the first league bamboo with a few small trees. There on the ridge grew many large leaved yew trees. Also a tall slim stemmed palm and tree ferns. Altitude of ridge about 9,000 ft. Along the San Miguel grew a great variety of large trees. I saw many Cedros and killer figs. Prickly stemmed palms were also common and a large stemmed bamboo, also 2 species of Cecropias and many tree ferns. The altitude of San Fernando by our aneroid was 4,400 ft. The owner said brocket deer, agoutis and ocelots lived in the forests but a few monkeys and no tapers. Peccary were found here also and the lesser anteater occurred. Pavahil and curracons parrots and other birds were common. The savages of the Nachaganga tribe wander so high in the forest and are timid and seldom seen. He raised a little sugar cane coffee peanuts pineapple and vegetables. Two species of squirrels occur, one very small and a large one. Armodillos are found lower down.

August 22 We left San Fernando at 8 p.m. and arrived at Yuvini at 1 p.m. Day clear and warm at noon. I saw only a large squirrel on the road and a few birds chiefly cassiques and jays. Saw my first Nachaganga savage, a tall ushed man with drawn bow standing on the river banks watching for fish. He was stationed across the river and below me and did not see us as we passed. He looked like the savages of the Amazon in the school geographies. Later at Yuvini we saw other more civilized and clothed. Berg was away in the forest with his rubber gatherers when we arrived and did not return for a day or two. His station is situated in a wide

valley with clear forest but bushy land bordering it.

Bananas and oranges in numbers grew near and the huts Indian have a cane field and mill for making aguardiente close by. Corn is raised higher up in the hills and we bought some for the mules. From the station a grassy ridge call the pacanal some 1,000 ft above the station and above-the-ridge across the river can be seen where there is good pasturage. The aneroid registers just 3,000 ft. Yuvini. The Pampacous river joins the San Miguel only about a league above here their union making a cosireui river. Couservidoor is said to be about 12 leagues away but there is no trail to the place from Yuvini up the Pampacouas.

August 23

We caught no rodents in the bush near camp Marcos and Lewis left early with the mules for Ollantaytamba. I waited for a guide in the morning but as none appeared I went out in the afternoon to the cane field for half an hour up the road. Found no agontis or squirrels but an Indian took me to a agonti runway at the edge of the yuca field. When we arrived we found a Machiganga palm but there with a hole facing the runway and a bit of corn as bait in front of the hole some 2 3 ft away. A Machiganga Indian with a bow and arrow was withing for the game but moved away timidly when we came. Two other Machiganga in the forest with their faces painted bright red and long robes were seen but they disapperaed quickly also. Berg says this hut or blind method is their usual way of getting any sort of game. I saw several yellow tailed cassiques and shot one. A large tree containing their long nests grew in the cane-field. Shot two of the large red headed log cocks and saw several other skimming. A large species of Toucannms seen in flocks of five of them two shot. Two small slaty hawks or kites were also killed shot in the fileld. Parrots flew overhead and a tamed one talked Zuchua at the house where a single puss of logs were erected for pressing the cane. Berg came in form the forest in the afternoon and I went over and talked to him in the evening. He is a Norwegian who talks perfect English having lived two years in England London.

But without any acquisition of the U.S.A. He is about 50 years lively and brown haired. He reported Tapu as the only one seen by him. A few days ago he shot a lesser antean which are also rare. The monkeys are local and not wide spread. Two months ago the black spider monkeys were living near the river but now they are higher up the slopes. He says the river here is the Cosirans and flows in above the bog bend. The next river below these to which there is a good road is the Cornberciato and this enters the Urubamba at the bend a few miles below the Cosirans. From the grassy pacanal ridge the whole country is visible. On the counterociato there is more game and the country is lower but malaria is prevalent. He says that slave raiding still goes on for rubber labors for the lower amazon. The Indian lower down of another tribe come up into this country in the dry seasons in moonlight nights captors of Machigangas and take them below as slaves. These Indians have combines and shooting who resist. Last year he lost 15 presumably in the same way. Berg has found a great many old Spanish mine roads and some bunds of old gold mines. All the road led to Conserviööow and the whole country was known only to spanish. He has many stories of rich gold mines known only to the Machigangas.

August 24

Went to Pachaval with a guide over the mule road which crosses the Cosirens on a suspended bridge. Saw no ceant monkeys or other mammals. The pachaval is a good pasture the grass growing on dry hard clay and in scattered condition. Saw a few condors flying about the mules and cattle which are there. Shot 4 wood pigeons of a brocelic brown color. They utter a very soft pleasant whistle, shot a goutmaker in the trail, also an olive backed trozon of small size. Small birds were quite absent. One peculiarity is the absolute lack of hummers anywhere. Flycatchers are also quite rare. Most of the birds are large and a few in number. The rocks in place along the road up the hill were soft slaty shales. On the floor of the valley are large granite boulders along the road but they all come from the headwaters of the river.

- August 25 Remained all day in skinning birds . Jose caught one *Nectomys* yesterday and another to-day out of 60 traps. set at Rodents are very rare here this may be due to the great prevalence of carnivorous ants and the hard clay floor of the forest. Swing in the palm Santo trees in the forest is an amber colored ant which bites like fire and is exceedingly painful. It lives in the fork of this tree and ~~only~~ only but the santos grow everywhere near streams.
- August 26th Caught nothing in the 4 steel traps set near the lower road. I went with the guide to the Cuple de Monos found a troupe of 3 and shot at them with the 22 but secured nothing. They were large black spider monkeys appeared to be fairly tame but we could not find them again. Saw several beaks of a small partridge golden in the depths of the forest, also two corks of corbs and many toncas. Berg says that a bush occurs here. They occasionally come in pairs near the house and kill chickens. The stinging amber ant lives only on the Pala Santo tree a small straight straight tree with elliptical leaves 1 ft. long. This tree grows chiefly along rivers and in wet places in the forest and seems near to be without the ants.
- August 27th I went across the river to the monkey Culpe again to-day but saw no monkeys or other mammals there. On the return at Yuvini creek we saw 3 small black tamarin monkeys or ~~other-mammals~~ running along the bank into the bush but they were so quick that none could be shot. They appeared solid and about 1 ft. large in body. Shot a crested golden quail in the forest from a band of six; also a crimson red quail dove. When I returned to camp I found that the Machigangas had brought in a red and black *Ophibabers* snake of another species inside nearly as long as the other which was in fresh condition so I preserved it. I have only seen one species of lizard here near the houses. There are more along the road or the montana. It rained last night accompanied by thunder and lightning. It rains somewhere in the hills nearly every afternoon but seldom down here in the valley. The hill country here is without dry season rain falling the year round.

August 28th I went out shining last night as the moon allowed 2 hours of darkness before rising. A large goatsnake was seen along the road in numbers and I shot 2 and 2 the latter were different in color and contained eggs ready to desposit. Shin shined a fine red deer Mazana size of a gray andean deer but reder ah color with blackish head and legs exactly like the bush buck of africa in general body color. This one contained a naked embryo the size of an squirrel. Stomach contents were several olive like fruits of palm, pieces of orange fruit of Solomon and a large soft fruit size of a prickly pear; also many leaves but no grass whatever. Teeth well worn Exchuyual pit small. Several families of Machigangas came to see the camp this morning. The women wore long robes and the men much ornamented by necklesses of seeds pods of several plants, also also bills and beads of 2 species of torcanas and some parrots together with stones of agantis and monkeys. The men were less ornamented with only a few beads in the case of boys with a crown of wreath of parachil feathers. They had the cheeks and nose streaked with red pigment from a cultivated plant however. They asked for the meat of birds which I gave them and they were also much interested in scissiors. One of them had a shot gun and all had a watchlettes or large knives but few bows and arrows. In the late afternoon I went over to the station and saw the skins Berg has gathered and he had one golden prehensil tailed anteater one occlot, one collard pecarry, one white lipped pecarry and 4 deer skins all of which were red like the one I shot. none being bay colored. A good many Machigangas arrows were seen in one of the houses. They made with a reed shaft with a cedar head and feathers at base with a spiril twist. Some of the feathers were macaouras. The bows are made of very bord wood which is deep black like ebony. It is obtained from the stem of a slender prickly palm. A tame pecarry callard was seen to-day feeding about the place.

August

August 29th Saw nothing last night on the road down to the bridge which I shined.
shined. Went out in the morning with the guide for peccaries near the cane field but saw nothing or met with any tracks at the culpes in the forest. In this district the natives know of a few poisonous snakes and of no really large ones like the boas. This is remarkable considering that poisonous snakes occur higher up in the valleys large ones in the Amazon valley lower down. Lizards are also few. The ^{lack} ~~absence~~ of snakes generally may be accounted for by the absence of rodents which are their chief source of food. Along the road were seen two platforms or large nests made by the Machigangas in a tree bearing olive like fruit which is eaten by many birds and also deer. From these platforms they lay in wait for the birds. Berg says that the bats often come and eat bananas placed on platforms to dry near the houses. By using strychnine he has killed many but only two species one with white stripes on the face (Artibeus) and the other uniform gray brown in color. Glossophaga The rubber he collects in the forest is the kind called jevi a species of Para rubber. The common caucho does not occur here. The rubber trees occur lower down the river a few miles and are tapped annually for rubber.

August 30 Shined up the road for 3 hours last night and shot a bassari-cyon from a tall tree in the forest. I was first attracted by its peculiar cry which was uttered when it saw the light. Later we saw its eyes which shined very brilliantly like those of a leopards. This one was an old in shape and color it resembled exactly a kinkajou. The stomach contained fruits and green vegetable pulp. In the morning I went with the guide and crillo up the road to the pachinal and over as far as the great bend of the Urubamba. Here we looked down upon the entrance of the C Combercieta at the bend but the Cosiren entrance behind a ridge and farther up. Well up the river a bare grassy or burnt red hillside was pointed out as Rosilina. Along the Urubamba river we could see many sand bars and the level beaches with bush and forest further back. On the road we met with a troupe of Cebus monkeys one of which I shot. They calling uttering a peculiar

squeak or whistle. The guide Mariano decoyed them by uttering a similiar whistle and shaking a tree sharple imitating thus the noise made by a monkey jumping into a branch. They came to this sound twice and both times I fired at the monkey. They could not be seen peering at us through the trees. They about a dozen monkeys were in the troupe. The tail tip was without a pad but curled up and was no doubt prehansile but n not greatly so. Flushed from trees could-sewere many parrots but could not see none sitting altho the trees were small. It is remarkable how impossible a green parrot is to see in a Cafy tree as it sits perfectly still. The remarkable eyesight was not able to see them either. On the way back I shined the road but only got a kinkajon an old . It was high up in the trees in the forest ridge. Saw on the way down to the ridge a large rat or small rodent on the road but it ran into the bushes when we apprazehed approached. The height of the farther pacanal which is directly above the gra- great bend of the Urubamba is about 5,000 ft the tral crossing being 4,800 ft where it passes over the summit. The climate is cool and there is a heavy growth of grass shoulder high in places. Much of the open country is covered by brooks Ptersquilina 6-7 feet high and the hills look like our northern slopes near pine forests.

August 31st Rained nearly all day beginnning at 7 a.m. with a thunder shower. The kinkajon had large skin glands at the angle of the mouth and a naked patch on the throat. Heard the large black spider monkeys calling at 2 p.m. across the river. We remained in camp all day. Berg returned yesterday from the nomtanya with sciatica rheumatism.

August 1st Went out again hunting black spider monkeys across the river with another as Mariana had a bad ear. We went further up the river than before, as far as the edge of a large ravine where we heard the monkeys yesterday but we saw or heard nothing of them. While we were waiting at noon well up the side hill we heard the chirping and soon saw a troupr of squirrel monkeys. They were in small trees near the ground and when we squeaked

at them they came in sight in twos and threes. I shot 4 with 4 shots some 40 yds away and two others were seen later. These were black with white faces and brown rump. They have a slight mane and appear to be close to *Midas bicolor* in coloration. We saw no other mammals and very few birds. Took up the 4 steel traps on the road and found a large *marmaosa* in one but badly ant eaten and dead killed by ants. Day cloudy but no rain. Saw much of the yellow tuberculate fruit in forest which is favorite of the monkeys. name *Gornebe*.

Sept 2nd.

Remained in camp skinning monkeys Rained quietly part of the day. At night I went shining up the road and shot another *Bassaricyon* at same spot where I shot the first. It was a but smaller and less miniature than the other. It first attracted our notice by peculiar rattling cry. The stomach contained yellow vegetable pulp of some forest fruit.

Sept 3rd

The guide's ear was still bad so could not start for the Rio Comerciato but berg sent for another guide who arrived in the afternoon. We went up to the pacanal but saw no monkeys or other mammals. Took supper with Berg who furnished both Spanish Sherry and some home grown tobacco. Tobacco grows well at Uuzni and is of good quality but as it is a government monopoly it does not pay to grow it.

Sept. 4th

I started at 8.45 a.m. for the Comerciato with with one pack mule and saddle mule. Jose and Corillo and the guide. On the ridge overlooking the Urubamba we met another troupe of the brown *cebus* monkeys and I shot an old His stomach contained caterpillars and purple fruit pulp. We camped at the Combiato which has a fine pebble beach nearby. The altitude here was 1,800 ft Rained during night and afternoon. Here we saw a pair of allers fishing in the river without showing any fear of us. The river is broad some 50 yds and quiet without any large or rough rapids. All night we went out with the light but only saw a few toads and a gout sucker. Shot a black currow having a white crest. Saw two of the large slaty tinamons. They are the size of a guinea hen similiar in color. I saw some of the large bats of the genus *Phyllatomus* near the camp at

dusk.

Sept. 5th

We travelled up the river to the upper station rubber of Arroya starting at 7.45 and arriving at 1 p.m. day rainy. Two hours up the river we reached a Machiganga village with about 15 inhabitants some of them the same who visited us at Yuvini. On the road I saw several of the white crested curassows and a pair of rufous tree squirrel but did not see any monkeys or tinamous or any tracks of tapirs pigs or deer in the road which was soft and slazey in places. The river continued broad and without rapids all the way. At the upper station of Arroya I was surprised to find it only 2,100 ft or only 3,000 ft above the first camp which is 15 miles lower down the river.

Sept 6th

Rained in the morning after we had started for a culpe to hunt monkeys. Saw another squirrel red but no monkeys. Last night I shined about the camp but saw nothing nor did we flush at any animals. We started down the river at 10.am. On the way we met about 10 or 15 squirrel monkeys and shot 4 of a and 3 of All contained frogs. The skull is extremely long and overhangs the condyles greatly. The eyes of these monkeys were filled with moisture or tears at death. Beddard doubts hundred tea all tears in their species. These monkeys did not seem to have any alarm notes but followed one another close and silently through the trees. I shot a panhile a fine a no doubt. Made camp in the deserted machigangas village near the inhabitant village.

Sept 7th

Went shining last night and shot a opossum hanging on a tree. It was very peculiar on color and had a very long tail and naked along underside only but for a long way. The genus is Philander. During the night a vampire bit the guide on the forehead. I noticed a bat come into the hut and flutter about me several times but was not attacked. It is possible that this bat is of rare genus Diaemus with white spotted wings and attacks people chiefly. Our mules were not bitten, while the Diamens which attack mules never bite men in Peru. Berg told me that he was also bitten by a ~~h~~ bat at night on the face. on the Comercio. We stopped on the summit of the

trail in the forest until night and shined the road for a distance of nine miles to Yuvini. Saw only a deer on the forest road ^{below} near the pacanal. Nothing was seen on the open grass of the pacanal nor in the forest on the other side of it. Shined a night snake a small boain a tree which it was climbing. Eyes glared large and red. Arrived in camp at 11 p.m. Shot another cebus on the summit at dusk as they were about to roost for the night. The herd numbered about 50 and were very timid scattering in all directions. Only one returning to our call note and tree shaking.

Sept. 8th. Remained in camp allday skinning mammals and birds shot at Comerciato a few light showers passed over at mid-day.

Sept 9th Went over across the river for the black spider monkeys but neither saw nor heard them. Saw a red deer Mazamo at one of the cuples which ran up the bank and then stood behind a tree with the hind quartered and posed. I fired at these with the 22 auto and then she went a few yards and stopped behind another tree. I fired again and she went hit dropped pace down a hill. A few minutes later I saw at the culpe lower down I saw a greyish animal with shuffling gait. It was a probably a prehensile tailed anteder but I could not see it distinctly. Before I could get the shot gun from Jose it passed out of sight. On the way back we went down the river and on on one of the sand flats I saw the tracks of a taper but only in this one place. Saw also a cat like track size of an ocelot no deeror Dasypsecta tracks. Shot one of the large colored slate tinamons also 2 ^{black} brilliant and blue tanazers. Rained at 2 p.m. and again at 5.30p.m

Sept 10th As Narcisso had heard the monkeys calling lower down the river slope we returned to-day at noon and took route up to the first cuppe but saw no monkeys nor heard any. At 4.p.m. we returned to the road and went to the pacanah from which we started to shine for cãbar or dark. Saw nothing however. Near the culpe I saw a brown viper coiled lying on a dead palm stem of the same brown color. The viper showed no movement but coiled up and I shot at it. This is perhaps the same species as bit a Machiganga as he lay hold of a limb climbing a tree.

The man was very sick but recovered.

Sept 11th Went again for monkeys across the river with a Lucma guide who was sure he could find them. He took us up to a large culpe to merits head where a trail leads to the salty cliff of black shale. We saw no monkeys but shot a red headed tinamon and saw one small tanazers. The guide said that there are nine species of monkeys here: 3 redors, 2 black, 2 small ones 1 pastry colored and 1 night monkey.

Sept 12th This morning a Machiganga guide to the bridge across the river above the camp came in and so we went with him and Majordour. The bridge was very shaky and consisted of long poles lashed together with bark thongs. We went up the hill and down into the large culpe or forest stream and met a troupe of 8 black spider monkeys. I shot into 4 of them at close range but failed to knock any down. We went up the culpe to the river and returned along the shore. Saw no deer or other track in the sand or mud. The men saw a squirrel. No large birds were met with. Day clear and warm with a good breeze.

Sept. 13th Was another sunny day with good breeze. I left camp at 9 a.m. with 2 guides and one ^{pack} mule for the Comerciato. We camped at the 1st Tamba at the Playa where we arrived at 3 p.m. Shot another large slaty tinamon and also one of the small ones which is the size of a lobulate. Shot 4 new birds one red screech owl another a red belied jacoumar bird and a large billied olive barbet, also a long tailed tody tyrant. The guide shot another one of the large growling currosows. Set other traps in the river but saw no others. Water muddy but not high. At dusk many of the large Rhylostomes bats appeared flying in flocks above the river. I shot a pair of and .

Sept 14th Caught nothing at night in steel traps or rat traps either. Day bright and clear. Remained in camp skinning birds while the guides went up the Postachiato creek. At 4 p.m. we caught a fine ad otter in one of the steel traps which I set at the base of a large tree. This occurs not very large not great Brazilal species. She contained 2 small embryos stomach contents fish bones only; condition fat. We also caught a fine gallinile

of 3 colors on body in a steel trap at noon by the leg. The guides came in late without having seen anything or fired a gun but saw many Machigangas sapling traps in the forest.

Sept. 15th Moved up to the Machiganga Village at 8 a.m. On the way I saw two panhiles and 3 white coated currosows but no mounds. Took photos of Machigangas houses and boats. also traded knives for bows and arrows. In one house I saw the skull and meat of a freshly red barber monkey. Traded also for a set of Peter pan pipes which they make of reeds of various lengths. At dusk one Machiganga brought in about 30 small fish of 5 species, 2 were gobies 2 shiners and a cat fish. These he caught by hand in rock pools.

Sept 16th Went hunting howling monkeys with a Machiganga. We went above the village to some culpes where we could hear them howling at 8 o'clock. We found a troupe of about 10 and shot 6 of them: 1 old , 2 old , 2 yg and a nursing yg. They did not leave the tree together but some stayed for a half hour high in the branches after we had fired on the others and made much noise. They are quite stupid and leissurely compared to the alert black spider monkeys. The throat of the old males are enormously swollen and bare where the lanyax is enlarged. into a great sound box. Stomach contents of all were figs which occurred abundantly in the forest. Left at 3 p.m. for Yuvini where we arrived at 9.30 p.m. and found M & F in camp.

Sept 17th Remained in camp skinning monkeys and birds. Day rainy.

Sept 18th Went monkey hunting across the river but saw none. Day rainy all day. Shot a new black Currosow also a new guallala or chatahalaco near camp; also a trozon and red crested finch. Saw a king fisher on the Uruvin creek the first I have seen in Peru

Sept 19th Day rainy. Went to the bridge and set the net in a stone bordered channel.

Sept 20th Caught nothing in fish net as leaves blocked the entrance. Caught on bats in rat traps baited with bananas and set for bats at the finca. M & F left this morning for the mouth of the Cosiron with 8 zuichua carriers. Shot small birds near camp where I obtained 6 new ones and 3 already taken at San Miguel bridge. Day misty.

Sept 21st Moved over to the Combarciato River this morning but as it was raining I did not start until 10.30 Made camp at the mouth of the postagiato at 3 p.m. Saw no monkeys or birds on the road. Shot five large bats at the camp. They showed much variation in color. There was nothing in the other traps. The river was much higher and muddy.

Sept 22nd. Made camp at the Indian village at noon Day clear and warm. Saw nothing in road up. The Machigangas did not come to camp as they were all drunk with chicha and celebrating. The guide caught two cat fish in the river with hook and line.

Sept 23rd The zuchima guide and 4 Machigangas departed this morning up one of the tributary streams for black spider monkeys which live higher up and 8 days journey away. I went up the road to where we shot the squirrel monkeys with Jose but saw no mammals or large birds. Shot a new jay on way and later two others at camp. The whole country forest here and elsewhere in the vicinity is without mammals practically. No rodents are in the woods and traps catch nothing. Opossums are rare and deer are scarce, so are peccaries, cats and squirrels. Small birds are also rare and large ones are seldom seen although there are many different species. I think this absence of mammals is due to the great abundance of biting flies of many species. Caruvin ants are everywhere and meat cannot be used. The mules here are bothered by flies. If one sits in the forest within a short time biting flies are in numbers that it is necessary to move. In Africa where game is abundant flies are never a great past as they are here. The vegetation is luxuriant and with it would grow an abundant fauna if flies and insects generally would allow mammals and birds to exist freely. Day clear and warm.

Sept 24th Santos the guide and 4 Machigangas returned this afternoon with two woolly or Lagothrix monkeys and adults, 3 black Ateles bird and 2 large Penelope guano. The Ateles was very large exceeding the and her several organs were quite Hyacinth like that is the chitinous not very long with the vagina a slit in its base. The had a small testicles black so that

the sex differed in external appearance is not much. I shot a full grown solitary one which is a very peculiar state for these sociable monkeys. The monkeys here are very local and are not generally distributed or wandering. It is necessary to know where they live and hunt them in such spots in order to collect the various species. The black tanarins and squirrel monkeys and Cebus are exceptions to this rule. They move about and may be met anywhere in the forest but are rare. Day cloudy and partly rainy.

Sept 25th Remained in camp skinning monkeys and birds Santos went out for squirrels and brought back a small olive one previously seen by me. The rusty red species I saw several days ago he failed to get. He shot 2 panhiles and 3 white curassows also a long yellow tailed parrot. I caught a large neotomys near camp and shot a yellow winged seaside finch. Day cloudy with some drizzle. Went skinning out at night below the camp on the trail. At the culpe de pairs I shot a tree boa 78 inches long. The eyes shine well as it lay downward on a vertical tree stem 3 feet above the ground. It was a powerful constrictor and I had difficulty in pulling its coils off the gun barrel. I shined a mammal in tree top a bassineya I supposed I knocked it down but could not find it. It remained in the tree for one hour while I went for the gun and moved very slowly.

Sept. 26th Santos went squirrel shooting and brought in one large red species. The Machigangas here feed on yuca almost exclusively. They also make a choco of it and they were intoxicated by this stimulant the day we arrived. A few fish and monkey meat help out the diet. They grow also a few papayas and pine apples. Cotton is also planted and is used for weaving cloth. Maize in small quantities was also seen in the huts. Went out shining at night but saw nothing.

Sept. 27th Started at 7.30 to return to Yuvini saw no monkeys or squirrels on journey except at the crest of the pacanal where we met a troupe of Tanarins which skirred away at once. Found Maynard and Dr in the camp returned from the mouth of the Cosirin. They reached the mouth in two and half days very steep over a

trail. In many places they encountered cliffs and narrow edges almost impassible. They saw a single pecarry and a troupe of Brown cebus monkeys, The tracks of the taper were seen on the river in same spots for 2 nights consecutively Ducks and currosows were the only large birds seen. No Machigangas or Umbamba were met except a few on the way down the elevation at the mouth of the Cosirin is 2,000 ft.,

Sept 28th Remained in camp all day labelling specimens Day partly rainy but night clear.

Sept 29th We broke camp and journeyed to San Fernando cloudy Day but no rain on trail. Santos shot a black currosow and a new quail dove and flycatcher enroute. I saw no mammals or other squirrels near the road. Met Lewis returning with pack mules from Ollantaytamba. At San Fernando we found an old man who had taken possession of the house and was living there with the Machigangas boy Julio and a Zuchima Indian.

Sept. 30th I went down to San Miguel river opposite the S.A. with Julio the Machigangas who spoke good Spanish we saw a fresh deer track and many old pecarry tracks at the culpe near the river bank. In the peanut field we saw a new fresh jaguar tracks in the soil. Santos returned without any mammals Some of Yuvini men brought a small squint shot with an arrow on the way up here. Went out shining down the trail but saw nothing. The Machigangas are very honest and have taken none of my traps altho they were with us when we set them. Their civilized neighbours the zuchimas Indians are terrific thieves of traps and untruthful as well. The Machigangas have a great love for pets and domesticate all the species of parrots except perhaps the macare. Monkeys, pecarries the panhill trumpeter and other birds were found in great numbers about their huts domesticated.

Oct 1st Rained during the night and in the morning also. Last night and the night before I went shining along the road but saw & nor heard nothing. I caught 3 more tree rats in a hut. 2 black oryzomys and spiny nectomys mouse. Santos brought in a small squirrel. I shot 4 new birds to-day a small blue and black

colliste tanazer, a long bellied ground wren, a yellow warbler and a ash throated flycatcher.

Oct 2nd. Caught 2 more tree rats, one spiny mouse and 2 brown oryzomys Santos brought in a large tinamon and a quail dove. I shot a large red bellied hermit hummer. Maynard and Dr came in from Yuvini at 3 p.m. Day partly rainy with no sun the rain fell in short showers with some thunder at a distance.

Oct 3rd I caught more of Phippionomys and oryzomys mice but no new ones. Julio brought in many lizards with heavy spined tail and green heads and guloous. Jose caught a small slender eumeroes lizard and several night ago I caught a snake marked by black rings darnally. Lizards are seldom seen here however. The day was cloudy with rain showers at rare intervals.

Oct 4th We broke camp at 10 a.m. and started for Iduma The day was bright and warm. I shot several new small birds on the way, one metallic green and brown colliste a red tanazer with black wings, a small species of indigo ant-strike. We slept in our saddle blankets and made tea. It rained thundered during the night with much lightning.

Oct 5th Our pack train arrived at 8 a.m. and we travelled up to the huts near the summit of the pass where we arrived at 11a.m. The day was foggy with misty rain. saw many small birds and shot the of a pair of torrent ducks near our camp. I saw several of the ant shrikes, also black robins and other familiar birds. Found two women and children in the huts but no men. They had a few cows, chickens and pigs but rise no potatoes or crops apparently. Near here in the creek are all coated bright Zervilliam reddy a minute fungurus but at first sight look it as if stained by an iron compound. The camping place is called Chirapata or Zguiraggta and has an alltitude of 11,400 ft by both of our aneroids which were corrected at Lucma. The pet monkey Lagothrix bought on the Comberciato died at San Fernando from the effects of the climate after 4 days residence. They are very tender and all have died which have been taken to Lucma according to the statements of the natives. They-leek are the most affectionate and gentlest monkeys in the low coun-

but I believe they have never been exhibited at Z...

Owing to the lack of hardiness to resist transportation.

- Oct 7th Caught 3 species of mice, 16 specimens in all one was a new white bellied *Phipidomys* but other *cuneomys* and *oryzomys*. Morning clear and bright but cool W. S. Dr left for Lucma at noon.
- Oct 8th Morning was rainy so I could not start for Iduma until 11 a.m. Travelled some 4 leagues and camped at Iduma Pampa near a cattle herders hut at the head of a black grassy valley. We crossed there two valleys near the head and camped in the third Country everywhere granite and without forest except a few and Groundsel trees. The country was Roasclous and covered with grass and wet everywhere. I saw a few birds but no mammals. The altitude verges on the road about 12,000 ft All the people pronounce Iduma as Ichuma without the d sound. The mountain ^{crest} in here is chiefly granite but no snow fields were seen anywhere Although the altitude of the crest must be about 15,000 ft.
- Oct 9th Remained in camp in Iduma Pampa as it rained most of the morning. The altitude by aneroid is 11,200 ft corrected by add 500 ft Went deer and visachis hunting with the owner of the hut who said both these animals were abundant. Rain however kept us from seeing everything. I shot a indigo warbler and a specimen of the lark wren we found so common at Occambamba Pass The road over here for the first league is flagged by large flat granite stones and built 3 ft wide in straight lines and is one of the ancient Inca roads but no ruins of terraces were seen and the road does not appear to continue built of stone very far. The two summits over the ridge we climbed I should estimate at about 12,500 or 13,000 ft I caught 3 species of mice last night 2 *cuneomys* and a yellow *Oryzall* species taken before. We departed on our journey for Iduma.
- Oct 10th The road was flagged by heavy stones and 3 ft wide most of the way but was washed out in many places and the ancient Inca road destroyed partially. At 2 hours after starting we crossed a good sized river which heads near Lucma. pass and here the Lucma road joined on our road. There was a hut here but no inhabitants The road continued flagged by granite blocks of Inca construction. At 1 p.m. or two leagues farther on we

crossed the divide and descended the heavy montana forest to Iduma. The rock formation changed here the granite stopping with the open grass summit shale and clay in places a block slate taking its place and extending all the way down to Iduma then the forest. In places the road was a slippery clay cut into a series of deep transverse into filled with water and one yard a step apart The forest at the upper levels resembled that of the Noches Picchu but contained a few slender palms in addition. Lower down it resembled the Yuvini forest but lacked palms Great fig trees were seen frequently and tree ferns abounded. I saw many small birds but few large ones and only one tinamon. Near Iduma we saw 2 Hasyprocta The first one seen erected on its hair on the rump before it ran away and this made a conspicuous cream colored fan or flag. as it was fleeing. Rained part of the day at intervals. we made camp at dark

Oct 11th at Iduma in an old pasture. The night was cool with misty rain M & F came about noon from Lucma. They had camped only 2 leagues above me. The administrador and other residents of Iduma visited the camp and looked at the specimens of birds and mammals. They said the black spider monkey was found here also small reddish species deer peccaries and agoutis occurred also and jaguar strayed in the country and killed cattle at times. I went shining up the road last night for agoutis but saw nothing nor heard nothing. in the bush.

Oct 12th I caught a few olive euneomys in the rat traps. I set some traps for cilmayrus or agoutis in ayuca field high up in a side hill. Went out monkey hunting with the Mayorduna in the namatayal above the sugar mill a few miles away Found no roads in the forest the trees were small but without much undergrowth No ants or biting flies were met in the forest. I shot a few small birds but saw no large ones Met a troupe of yellow Cebus monkeys and shot at them several times but killed none. We caught no cilmayrus in the traps I saw in the forest considerable peccaries rolling about the logs, also many trails of cilmayrus. About Iduma are stone rocks of the Incas. The country at our camp is divided into small fields by stone walls which are low and broad 4 ft wide and arranged as

terraces in a new fashion. Water ways or ditches are found on the hillside and also rough terraces formation. Most of the ditches in use at Iduma seems to be based on ancient waterways.

Oct 13th The day was rainy I caught several mars muceles in the fields. The cilmayrus traps had only a few hairs in them, the animals having escaped. Ford came up yesterday to administer to Narcisso who is down with malarial.

Oct 14th I went up to the forested gulf where we saw the monkeys but saw nothing. I set some traps for cilmayrus in edge-w run ways at the edge of the Yuca field. The natives say that they come to Yuca fields to feed and we looked about the edge of the cocoa and corn fields but could find no runways to dispose their assertion. At dusk I went down to the ranch house to shoot bats but none came to the tiled roofs. They showed me some in a store room however. While I was there all the men lined up for the evening call roll and then names were called and recorded in a book and each was given a cup of aguardients which they drank on the spot or else poured into a bottle. This is a daily custom at the finca. It rained during the morning. This ranch is about equally divided between cocoa and cane fields. Some Yuca and corn fields are raised for home consumption. This place seems to be as low as the urubamba valley as the Incas lived and it still marks the lower limit of the present zuchima cultivation. Peru to-day does not extend its civilization much lower in the amazon valley than in ancient times. The present population is parasitic on the fields and waterways of the ancient peruvians.

Oct 15th I went up to the cocoa fields where we saw the monkeys and set cilmayrus traps caught a weasel in one trap and a brown Oryzomys mouse in another. Shot several birds all I encountered the black and white ant bird a rufous winged synaxillia metallic calliste all birds common at San Miguel bridge. Saw several other species common there. This place has the same elevation and climate as San Miguel Bridge and the same birds and mammals fauna but has an infusion of lower amazon species such as monkeys marmosets peccaries etc. Collected 2 species of bats collopsys and hemideros in the ranch house. No altemodes

blood sucking bats over here to molest mules and stock generally. The day was rainy at dusk I hunted cilmayrus in the Yucal. I saw one at a longe range and fired at it but did not kill it. We saw another a long way off.

Oct 16th Went up early to the Yucal but saw no cilmayrus Jose brought in 5 euneomys from the cocoa field and a sad tale of two steel traps sprung and only hair in them. Caught 5 euneomys all have shorter tails than those of Toronto. I went to the Yucal at 4 p.m. and waited till dusk but saw only one cilmayrus. This one came out only a few yards and sat on his branches for a long time looking for danger. He apperaed perfectly black. I fired at him wht missed and he dashed into the gulch then the bush. Every day we have some of our steel traps set on cilmayan runways sprung but none have yet been captured this way. To-day a laborer brought me a fresh skin of an opssum This was the only dryest day we have had here cloudy with only one ten minute misty rain all day.

Oct 17th Rained hard all morning. Caught no cilmayrus in the traps only a few more euneomys in the rat traps. I went with 2 Mayardomos to 2 other Yucals where there were cilmayrus runways and set traps there. Saw a convey of 5 guans or Penelope in the bush as I setting the traps. Sgot 5 more hemiclerma bats in the ranch house but saw no Glossaphagas.

Oct 18th Another all morning hard rain. occured. I went out at 1 p.m. as soon as the rain stopped but found the cilmayrus unsprung. They must have a good eye for hard ground and refuse to step where the ground has been disturbed above the buried traps for their sense of swell is defective and the natives could not shoot them at 3 ft ranges. Those I have seen gaze about intently when they came out of the Yuca fields and seem to depend on their sight to detect an enemy. I caught a light brown Oryzomys which looks different from the others I have secured. I shot a new pigeon to-day of a vinacenuous and blue color . Lewis brought in the supplies from Ollantaybamba.

Oct 19th The morning was cloudy but rainless. I went to the Yucal for cilmayrus but a heavy rain spoiled out hunt. I saw one small

cilmayrus which ran straight into the Yucalicket and did not stop to look for further danger in the rain.,

Oct 20th

I caught a cilmayrus in the steel trap at last but he left only one two. A boy herding mules said he saw him early in the morning in the trap. I saw another cilmayrus in the Yucal but did not get a shot at it.

Oct 21st

I caught only two brown *Oryzomys* in the traps. I shot two new birds a very small dove and a yellow superculiar stupid kingbird. I saw no cilmayrus at the Yucal grande The day was rainy.

Oct 22nd

We broke camp at noon and moved down to Santa Ana. The day was dry and clear for several hours in the morning. At Santo Ana it was dry and hot without any evidence of any recent rain. Sr Carlos Duque took me into the house bag and baggage. Very little or no forests occur on the hillsides below Iduma. Along the roadside grew a second growth of bushes and small trees. I shot a few birds on the way down but saw no new ones. The long tailed tija was lizard was common on the road also the spotted rock lizard. The aneroid registered at Iduma 4,700ft and at Santo Ana 3,600 which is marked on the map 3,480ft. This would give Iduma an altitude of about 5,000 ft. Cilmayrus, *Ocotea*, *Broketa* and other mammals are said to occur here as at Iduma.

Oct 23rd

The day was partly cloudy but no rain fell. I caught 12 bats in the tiles of the roof. Two species were only secured the commonest was a small *Mollossus* and the other a brown *Myotis*. I spent the day skinning birds and drying specimens at the cocoa drying carts. The traps set in the sugar mills had only two *muc musceles* in them.

Oct 24th

I went with Carlos Duque to the urubamba river with a seine to catch fish. The river was muddy and in one of the back waters we found an ideal place to fish where there was a mud bottom. We caught some 50 small fish of 3 species; a cat fish and 2 kinds of shiners. I found a large brown snake which was just killed upon which vultures were feeding but I secured it for the ~~museum~~ museum. I saw two of the black cormorants on the river. I shot a small blackish grass quail in the cane-fields

also a black white winged tanazer. Jose caught in the traps 2 Euneomys and a largeoryxomys at dusk. I hung the seine over the roof tiles and caught 22 Mollosus bats but no Myotis as they issued from the tiles at dusk. Day partly cloudy but no rain.

Oct 25th

In the morning I went bird shooting in the cocoa fields but found only birds I had already collected. I shot a black tanazer, a rufous Synaxillia a dusky finch and pigmy dove. In the evening I caught 11 bats in the seine hung over the tiles of the roof, 3 were myotis, and 8 Mollosus. Carlos Duque caught a tree rat in his office and we caught an opossum in the sugar mill. Saw several of the large Phyllostomus bats in the sugar mill but could not shoot any owing to the darkness

Oct 26th

I left at 10 a.m. with a pack outfit for San Rosa where we arrived at 5 p.m. in a rain storm. Went out with the manager for cilmayrus but saw none in the Yucal. The ranch is planted sloely with some cocoa and some Yuca and corn for home use. Our way up the valley was the road was bordered by tall acacia with white blossom Piptadenia. A tall cereus cactus was also common on the road side trees. Algorobos were seen at Santa Ana and many Pala Santos grew on the gravelly bars and creek margins there.

Oct 27th

A heavy thunder shower raged during the night nearly all the night and much rain fell. Left at 8 a.m. and went to Huadquana where we arrived at 1 p.m. The ranch is devoted to the same only no cocoa been grown here. Saw Pala Santo and white flowered acacias all the way up the urubamba to this point but they do not occur farther up the granite Canyon. Hillsides bordering the river were slates and shales up to this point.

Oct 28th.

No rain fell during the night and I caught 4 cuneomys and one brown Oryxomys in the cane fields. I went up the road following Huadquania for a league to Yuca fields where I saw one cilmayrus. I saw very few birds and no new ones at all. Shot a blue and vineaceous pigeon like the ones seen at Iduma. Several small fields of cocoa occur here. Many algarate of palto trees were seen in the fields there were also coffee Yuca and pecay

trees growing. Huadquania is the upper limit of cilmayrus. Yuca, cocoa and cane in the Urubamba, Valley.

Oct 28th

In the evening I went to the Yucal but saw no cilmayrus there. When I returned at dark I found Johnson at the Hacienda. He is a montana man married to a Peruvian woman with residence in Cuzco. He has spent much time in the montans gathering rubber a year or so he spent at Fondode Nainique. He has seen sloths quite often also the great tailed anteater and often large armadillos. He has never met with a large snake of a boa type. Much of his time has been spent on the madre de Dios in Peru. low down where it is notable by steamers. He saw more animal life there than at Pongo. The taxidermist Kalinowski, a Pole is now at the Marcapata On the Madre de Dios, working rubber.

Oct 29th

I left Huadquania at 8 a.m. and climbed up the Nothofagus Picchu ruins. The day was misty rain. At San Miguel Bridge I picked up Richart and an Indian who carried my bed and food up while Jose and Gerillo carried guns and clothing. We reached the top in about an hour and fifteen minutes. The large ruins were not overgrown only weeds and bushes seen hiding the terraces and walls. The city looked quite small and probably only held 200 inhabitants most of the buildings were only crude stone work, only one I saw was really made of finely notched granite. All the available ground was planted to corn verrachos, most potatoes and pumpkins. I saw no trees growing on the city site and no large ones near. The stumps of trees cut 3ft then were occasionally seen. Richart says the cilmayrus and occur in the fields but I saw no tracks or runways. He says anumayas or Conepatus are common, also weasels but no squirrels. He knows of no large rats the size of those caught by Indians. Vipers he says are common he killed two recently on trail in the sunshine. I set steel and rat traps but saw no signs of large rats. I saw one condor near by also several white bellied doves, crested sparrows and black headed Goldfinches. Heard an owl roar on the mountain in the evening. I saw the little white bellied hummer, also the black chinned and the sparrow hawk. Bush chiefly Bamboo and grass and prickly acacia.

Oct 30th

Night clear and bright and cold. I caught only one small *Oryzomys* in the hut and nothing in the fields. or ruins. I saw this morning several red headed vireo warblers, white throated ground tanagers, crested sparrows, house wrens, and heard many *synxillia*. I saw at the hut several white throated Grosbeaks like those of Ollantaybamba. This must be their lower limit as none were seen at San Miguel bridge. The bushy country looks favorable for rodents but there are no runways or signs of rodents about. I saw a small species of swifts quite different from the large ones which is common in the lower valley. The white bellied violet swallow is very common Cerillo saw a tinamon near the spring like the one shot at Peru. There is another spring below for the other inhabited huts. From the city a wonderful view of rugged peaks is obtained from the north above Mudor Pampa and Maquina but only a narrow edge of snow mountain can be seen apparently on one of the Torontio Peaks. The country above Manda Pampa is very rugged and uniformly forested by *Nomtanyas*. The peaks are very sharp and reach an altitude of about 12,000- 13,000 ft. This morning while poking about the country I ran into a nest of wasps like those met at Yuvini. They attacked me the same way, I had no idea that they could be found outside of low country. Machu Picchu gets on clear day for about 12 hours if sun owing to its open situation on a ridge far from the high edges. This makes it much warmer than the Umbamba Valley below which gets only some 3 or 5 hours sun. On account of its exposed ridge it is much colder at night and has the climate as well as many of the birds of Ollantaytamba. I have seen only a few of the San Miguel bridge birds here. It is dry with very little moss and is not so humid as the surrounding country. The weather was partly sunny and without rain all day.

Oct 31st

Rained all night a quiet mist rain which continued till morning. I caught only one mouse a *Oryzomys* in the traps. Stopped raining at 11 a.m. and we descended to San Miguel Bridge where we arrived at 12.30 p.m. The descent was slippery and dangerous. We reached Huadquania at 4 p.m. The area now used in Machi

Picchu which roughly half of the terraced area supports only 2 small families to maize, verrachoes, potatoes and pumpkins etc. Hachi Picchu perhaps never held more than 500 persons and then most of their food was brought up from below. The water also was carried from the river as the spring flows very slowly and become quite dry in the so called season.

Nov 1st

Left Huadquania at 8.30 a.m. and reached Santo Rita at 4 p.m. where we camped in the field. It rained during the night and also enroute at Manda Pampa to Maquina I saw very few birds on the road and only one new one, a small brilliant green spotted Galliste which I collected. At Santa Rita I saw a tatch palm in the Montanya with some small ones near by and several large tree ferns. This is the only place in the valley I have seen a palm above Santa Ana and no doubt the extreme upper limit of palms. The river continued on red mud color like the Colorado. It is about 1 foot higher than when normal and is very ugly the water giving ^{the} rapids a nasty appearance. The maize is about 3 ft high in the fields. Insect life is none abundant than in July. I saw several of the large blue butterflies so common in the low country. also clusters of the small black and red ones on the road which were seen in numbers on San Miguel and Iduma. The Palto or Aguacates are now ripe and I purchased some at the Ambamba river junction. This point seems to be their upper limit in the valley as well as that of cocoa and Yuca. The Palto ripens from now till December only.

Nov. 2nd

It rained all night and part of the morning. We got away from San Rita camp at 10 a.m. and reached Ollantaytamba at 4.30 p.m. No rain fell but heavy clouds prevailed all day. The country was green and wet everywhere on the canyon of the Urubamba the road was bordered by the long red blossoms of Fucia. Farther along the giant cerens cactus were in blossom the flowers of which are white and very large being 5 inches across. With the cerens grew the Stenolobuan bushes which was also covered by a profusion of yellow flowers. A wall cerens bore red and round blossoms and a round stemmed Opuntia cactus in places crossed by red blossoms also. I shot 3 new of the large throated

hummer and a small white and brown swift. I also shot a greyish bird and a chimned hummer. Saw many long tailed green paradise hummer. Apparently the of the small long tailed hummer previously shot at Chospinoc. The giant hummer patagora gigas was common but I saw no brilliant males of this species. Found Maynard and Husbrouch only at Youquibossi Husbrouch saw a bear a few weeks ago across the river from Santa Rita. in the open grassy hillside far from any forest but refrained from shooting at it.

Oct 7th I went deer hunting with Husbrouch at the head of the creek on which the ruins of Panamarca are situated. The day was cloudy. At the pass which is about 15,000 ft high where we intended to we were stopped by a snow storm and heavy coat of snow for 2,000 ft prevented us from further progress. I shot a new hummer and a black headed buff one, with a white breast patch. I saw a large yellow filcker, also a pair of huallata geese and many white shouldered wood pigeons in the pass. Returned at 5 p.m. along the side of the valley high above the mainroad which follows the river. I saw one vicasho near the base of the pass near the hut. Many other live higher up but ~~being~~ owing to the rain they were not seen to-day. Saw 15 condors above Panamarca wheeling overhead. The cherry and peach trees are now loaded with green fruit about $\frac{1}{2}$ normal size and strawberries are just ripening.

Nov. 10th Shot a lame fox condor bait and placed him high above the fields near some house ruins a mile above the house. I shot a long tailed paradise hummer, and a gray warbler. I set three steel traps at the mule's body but caught only a native dog. There were 3 condors flying above us as we were skinning the animal but they did not come down all day.

Nov. 12th I caught nothing at the traps set at the mules body. No condors came down to the meat altho a few were seen daily above it.

Nov 13th We left Ollantaytambo at 10 a.m. with a pack outfit of 7 mules for Cuzco. Day clear and warm. Went by the way of the pueblos of Maras and reached Cuzco late at 8 p.m. after dark. Country dry but fields were fine and green with new green corn.

Maras is a large pueblo of tiled houses and paved streets. At Lake of Jucac I saw white herons and teal ducks. I saw also a few new birds along the road, a blue breasted yellow tanazer and another yellow species. Saw also the white breasted gray short tailed eagle. The common birds were goldfinches and sparrows.

Nov. 14th Left Cuzco for La Paz with Husbrouch on a train at 7 a.m. Day clear and warm. The valley below Cuzco was green with growing maize. At Sicuan station we stopped for lunch and visited the market which filled a large plaza. The Indian women had various sorts of vegetable, knitted garments, pottery etc for sale. At Agua Calientes we saw a herd of 12 huanancos near the track. I left the collecting outfit and Narcisso at Araranca station over the La Raya pass to await my return from La Paz. We reached Puno at dark and stopped for a half hour at Juliaca previously. In Plaza a long row of women Indian had rows of knit knitted articles, socks gloves caps of llama and alpacaca for sale. The steamer left puno at 8.p.m. for the lake Titicaca trip. The night was clear and moonlight the cold making overcoats necessary for comfort. The american minister to Beliva Mr. O'Rear was a passenger from Cuzco and with him was a M.S. commerce and a Tabu man gathering Chamber of Commerce data from South America.

Nov. 15th I awoke at 5 a.m. and went a deck to see the lake as we were passing through narrow strait between two islands. The islands of the lake were brown and dry but divided into small fields separated by stone hedges. We saw several balbos or reed boats fishing two being la shed together. The men were propelling these by long poles with what they row. The pole is a rounded stick without any paddle blade and is not very effective. For we had on the boat fine lake fish, a small flat peach called bogus very good in flavor with a texture of a flounder. This is the only edible fish supplied by the lake. The view of the Andes was quite magnificent from 6 a.m. the landing at 9.30 east of lake Titicana is a solid chain of snow clad peaks the lattest of which are Illamui and Marato. This chain extends for many miles unbroken and is doubtless the finest.

sight in the whole Cordillera of the Andes. Nothing like it is to be seen near Cuzco or from the railroad west of it. The Andean range has appearance of the snow mountains of Alaska altho much more lofty, but the set of peaks has the same effective snow clad appearance. Babies of European or Concosin stock usually die in infancy at La Paz and all through the highlands due to the altitude but if taken to a low altitude they survive and when two years old they can endure the high altitude and flourish if returned there. This of course is not the case with Indian, or Spanish american children which flourish at high altitude. A condition of this sort annihilates the possibility of European stock getting a firm foothold without transplanting adults. At Guaqui we arrived at 10 a.m. and stopped until noon to await the train. I saw many Balbas on the red dy shore. The town of Guaqui has wide streets and is clean with a good looking Indian Population. On the way to La Paz we passed the ruins of Tiahuanaco which lay on both sides of the railroad. Only some stone pillars some 20 ft high remain and are clearly visible from the car. The view of the Andes was magnificent; the road as it lay neared La Paz approached Illimani and just before descending La Paz the three great peaks of Illimani Marato and Paton tower above the B.P. gorge. From of La Paz gorge the city was spread below us with Illimani towering beyond it. The gorge ends just beyond the city. It is composed wholly of clay and boulders and is a sedimentary deposit apparently an old channel.

Nov. 16th -18th We went sight seeing for Joe Inslee a yale man, manager of Concordia tin mine. We took a long walk down the river to a villa. The banks along the river and the ruins of the gorge all the way was a conglomerate of clay and boulders. About the riverbanks were large Eucalyptus trees. Saw also cottonwoods, many weeping willows, some apple and elder trees. Roses were common in gardens also corns. Most of the birds on the roadside were different from Cuzco, sparrows tanagers etc. The Indians here are Arguaras a large more alert race than the Aymaras. The women wear many skirts or petticoats which stick

out and give them a large hipped appearance, or billet dancer aspect. They wore a rounded cranned panama straw hat of desby shape which makes them look homely. They have superior fighting to the Zuchimas and neighbouring tribes.

Nov. 18th Left La Paz at 1.40 p.m. on the train for Cuzco. Joe Inslee went with us as far as his junction. The whole town was down at the station to see the train leave. The day was clear and warm. We reached Guaqui at dusk and boarded the steamer in the harbour where a fresh breeze was blowing. The night was clear with full moon.

Nov 19th Morning clear on the lake. We reached the wharf at Puno at 10 a.m. 2 hours late. Many water birds were seen in the reed on near the shore; also a small dark fish called bogus which is eaten and of very good flavour. Saw the large black coot, a large black grebe and a very small one with white cheeks, also the black headed gull, a night wren heron, many large ducks (mallard) and a few sand pipers. Saw many of the reeds boats balbas, some with a single man poling or rowing with his pole. Reached La Raya or rather the station at- of Ararnca at 2 p.m. and found Narcisso at the station. I put up the tent at the station and set out some rat traps as the station men said there were many correjos in the bunch grass. I saw several large blackish rodents or runways but caught none. Caught 6 specimens however of a large fulvous and white rhipidymns. At dark a heavy thunder shower up and almost blew the tent away. This was accompanied by much hailstones and lightning from which the place gets the name of La Raya. A small creek runs by the station which is said to have 2 species of fish in it. Huanocos are said to be common above the station and vicings across the valley. Deer occur further down. Saw a condor flying above the station at 5 p.m. Bunch grass is every where but no bushes of any kind. Besides the grass a ugly barried sessil cactus was noted and also a sessil green one with red flowers was seen on the banks- also- a peculiar ice plant with showy red flowers was seen on the banks.

Nov. 20th

Day broke with landscape covered by a heavy coat of ~~stee~~ steety snow and the whole valley and mountain sides were pure white. Took several pictures of the pass and the heavy fog bank. which filled it. The tent had a load of snow upon it also. The sun came up clear but it took ^{until} at 11 a.m. before the snow melted. Caught 4 species of mice 2 rhipidymos one yellow phyllotis apodon. All the mounds here have long hair to protect them from the snow at night. At 12 noon the old drunkard Ordant with a horse and we went up the valley on the west side hunting huanoco. About two miles from the station we saw a herd of 11 feeding near the ~~station~~ summit on a grassy hillside. We went above the canyon and got above them but before we could get down to their position they were frightened by the old Indian and bolted. They kept uttering a ringing alarm cry quite peculiar and went away in single file led by a large ^{one} apparently. We went up the ridge after them but failed to see them again. We met however a large ^{one} and which ran past and below us some 200 yds. I fired at them and brought the ^{one} down in his tracks the first shot. Then I fired 4 shots on the ^{one} and killed her. When we approached the ^{one} he suddenly got up and in a few yards was out of sight down the hill. Later we saw him 600 yds away walking slowly along the hillside below us. As we were skinning the a herd of 14 came in sight. Ten of these were Huancoas and 4 vinegos. They stopped and fed at about 700 yds where they saw us but later the old Indian who had gone up to the summit to drive the herds down came along and separated them. The vinecugus going down the hill but none came near enough for us to shoot them. The huanocos are shaggy and gray brown with black faces while the vinegas are bright fulvous and shorter haired. I was surprised to find them in mixed bounds. The we skinned had only grass in her stomach altho 2 species of bush grow on the side hills where they feed. On her breast the skin was heavy and pad like as in a camel and on the hind legs were hairless pads or marts. Why they have such soft padded feet for the steep rocky hillsides they inhabit is a mystery

to me. I think that they have been recently been given to hill-sides and in valleys that are all swampy broad feet are an advantage. Hoofs would be of better service to them in their present habitat. The mixed herd of 14 feed quietly and only uttered its a notes when alarmed and ready to flee for safety. It is probable that this is near the upper limit of the huanaco range as they were taken at 15000 and that their coats are distinctly heavier than those living in the lower argentine plains. At sunset the daily hailstorm came up and caught us before we got to the camp.

Nov. 21st

Day cloudy but no rain until dark. caught 2 guinea pigs, or correjos as they are called here. Trapped several species of mice also. Went at 9 a.m. with the two Indians for huanico in the same direction as yesterday. Saw none on the wits where we shot them yesterday. So went up far on the side of the Valley to an open Pampa with 2 lagoons in it. In the swampy pampa we sighted a herd of 16 vincungas which trailed off to the hills when they caught sight of us. They were all adults of the same size and absolutely alike in color. The huanico we have seen very much in color from gray to fluvous. We followed the vincungas but the ground was too nearer then 200 yds so did not shoot. While we were watching them several took a roll on the ground in horse fashion. Two others dunged in one of the dunging places they use. The dunging places are everywhere in the haunts and are 10 ft across and clear of bunds grass but bright green by a growth of new short grass. The huanaco have the same habit. We did not hear the vincungas give any alarm cry. Above the vincungas we saw 4 huancos close to the ridge of the mountain and these were stalked. I shot at them from 400 yds but missed them and they ran over the ridge after giving their alarm note. I shot at them again far below at 300 yds and hit two in the hind legs which made them drop behind and stand for a long time. I slid down the hill and shot the large one again but far back. He went a short distance and fell but when I came started again. I hit him again far back so he could not travel. He lay on his side occasionally lifting

his head and squealing. I took several photos of his head while alive and then shot him with an 22 auto. He was an old

but not very old. His stomach contained only grass and the body was lean as was the intestines. The other one which was also a was quite yg. perhaps 2 yrs old. I knocked this one down completely by a shot on the hip and left it for dead but later it crawled away. After skinning the first one I followed it and photographed its head while in life. Occasionally it looked towards me while I was photographing at 6 ft but did not show reel fight, only snarling slightly. The stomach contained only grass and the body was also lean like the other. The other three ran away up the water side calling occasionally but not waiting for the wounded ones. Saw no vincungas or other mammals. A few pairs of Gullata geese were seen also 1 large plavers and a few mallards. No condors came in sight as we were skinning the huanacoos Reached camp at 5 p.m. in the usual evening shower and wind storm.

Nov. 22 Remained in camp to skin the Huanacos and a lot of rodents which I had saved for 3 days. Yesterday while I was at the the train was at the station dogs ate the head and tail of the first Huanaco skin. while Narcisso was away. Caught a mouse a new one and apparently a pygmy apodon. Day partly cloudy but warm and quiet until 5 p.m. when rain, hail and wind storms swept over us as usual here.

Nov. 23rd Day cold and windy but sunny very bitter however like mid-winter Caught another guinea pig and a few mice Went out at 9 a.m. with three Indians for vincungas and huacoacooes to the same pama where we saw the 16 vincungas on the 21st. On the way up the side valley we saw Huancoos on both sides near the ridge but did not stalk them. When we reached the pampa we saw two vincungas near a herd of alpacas When they came near the herd one of the alpacas would chase them and they would run away a short distance and then return for the two seen with the alpacas As we approached the place they ran out from a steep side hill unexpectedly and we lost them for a day. Above the pampa on a rocky ridge we saw 2 huancoos and these we stalked but they ran away

giving rent to their peculiar mule ~~say~~ ^{like} ringing cry. The vincungas we started made no sounds and the large herd acted likewise so I presume they are quite silent. The Huancoes whenever startled give their call and we often hear it before we see them. While we were looking about the country from the ridge a solitary vincungas came up the side of the hill towards us and I shot at it 300 yds. It was a of adult size but not old. The stomach contained five bunch grass and an equal quantity of leaves and stems of a small alpine but which grow on the ridge and which I collected for identification. A single condor flew over us while we were skinning the game. From here we returned to the camp following the ridge across the valley. When we reached the summit we saw 2 Huancoes feeding a long way off and which a seeing the old Indian above me gave the alarm note a large then rose up out of the grass near to us I fired at him 300 yds and finally hit him, through the lungs and again lengthwise through the stomach intestines. He went down hill a short way and fell dead. He was a fine large size of a llama and quite old. While we were skinning him a hail storm broke over us and the lightning played about us incessantly. The Indians stopped work on the skinning asserting it was dangerous and the old Indian prayed to the saints while the storm lasted. The ground was covered by a sleetly coat of hail and snow which made our descent to the road quite difficult on the steep grassy side hill. The stomach of this contained besides the grass some serrated leaved sessile alpine herb. We reached camp a little before dark. The vincungas had on the breast no bare pad for resting on as the Huancoes have and the hair is much finer and silky. The bunch grass which covers the whole country here is very stiff and rounded blades are around the tip with a sharp spine which enters the skin when ever one puts out a hand to the grass. In setting traps it is necessary to use care in shaving the grass aside. Nobody in this high puna sits on the grass after the initial attempt.

Nov. 24th

Caught another of the pygmy apodon and a guinea pig or koi as the Zuchimas call them. Went out for vincungas with the 3 Indians This time across the valley on the east side opposite the La Raya station but we saw nothing so returned to the old place the pampa we visited yesterday. On the way near the road we found 2 colonies of vischos in the boulders. Shot one but saw a half dozen of others. They appeared greyer than those of Ollantaytambo but size about the same. On the way up the creek saw a herd of Huancoos where we shot one yesterday. On the Pampa found a herd of 5 vicungas and these I stalked They were very alert however, and saw me as soon as I broke cover and were off. I shot at them running and also wallsing. I killed one fine old and wounded a badly in the hip but she went away with the others. I got her later however. These vincungas made no noise when startled or at any time and seem quite mute even when wounded. The stomach contents of the

left a heavy blood spoor and went away with the others the wound having torn out the ham muscles but left the bone unbroken. She went over a high rocky ridge and far down the other side and then when we came in sight again she returned to the original starting point. I shot at her twice at 300 yds and finally hit her at a great distance and found it to be 510 yds The bullet struck her as she was walking in the rump and passed forward in to the lungs. She contained a large foetus size of a house cat but hairless. As I was cutting the membrane the old Indian stopped me and said the contents was valuable medicine. He drank up the contents of the sack on the spot The Indians say the young ones are dropped in March. The stomach contents was chiefly grass When I reached the camp the boys showed me 3 deer in the ridge above the station about 600 yds away but as it was dusk I could not see if there was a horned buck in the herd. These are the first I have seen here. No condors came in sight to-day while we were skinning Saw several spotted lizards at 16,000 ft and lower they are the same sort as the one caught at the camp in a rat trap and are the highest reptile in range in the Andes no doubt.

Nov 25th

Went out early for 3 hours for huanacos as the train from Guiseo arrives at 1 p.m. Went to the ridge where we first saw huanacos and where I saw a herd tale last night. Saw nothing of them nor the deer we saw from the station last night. Day clear and warm but with cold bitter wind flowing from the north. Took a look at the vichasos cliffs but saw nothing. Returned at 11 a.m. and packed the outfit for Mollendo but no train arrived until after 4 p.m. Reached Juliaca at 9 p.m. and camped in the train.

Nov 26th

Day clear and warm Departed at 8 30. saw no vincungas until passing crucero alto where we saw a herd of 5 which Morkill shot. At pampa de Arrieros saw another of 6 near the train. Reached Arequipa at 5 p.m. Fields of wheat and alfalfa green but nearly ripe. There was no sun on either the volcanoes of mist or chania The dry season being at its height. Stopped only over night.

Nov 27th

On the way out a Arequipa we got a fine view of Corapuna The mountain standing all morning without a cloud near it. It formed the only snow mass in sight with the exception of a long snow bridge beyond it further north. Reached Mollendo at noon on a clear bright day. Took rooms at Hotel Heurairil.

no further evidence of deer so we retraced our steps toward camp. The ridge on which we were hunting held on its eastern slope the village of Huispang situated a thousand feet below the ridge. From ~~one~~ ^{our} elevated position we could see across the narrow valley the ruins of the ancient Inca ~~city~~ ^{fortress} of Huata, the walls of which were still standing on a sharp ridge which dropped away sheer a thousand feet on either side to the valley at Chospiyoc. The vegetation at this altitude, 13,000 feet, consisted solely of grass but lower down at 12,000 feet bushes became a feature and continued on downward to the willows and pepper trees of the valleys. One of the conspicuous flowering plants was a large shrubby lupine bearing a profusion of blue flowers. The grass and bushes grew luxuriantly at this season, in places where the soil was rich growing to a height of two or three feet.

April 17th. No rain fell during the night but the day was overcast slightly. Caught an ~~apparent~~ house mouse in the bush ^{having the} dark belly and naked tail. ^{characteristic of this species.} Two large scaly lizards were caught in traps set at ^{the} base of the cliffs. ^{for rodents} I shot a white crested flycatcher which had its stomach filled with blueberries of the prickly berbery bush. Another vampire attacked my mule on the withers last night. ^{fed on its blood}

April 18th. ^{The} River ^{is} falling slowly but ^{is} still red with ^{sediment} mud. ^{was caught} ^{maize} ^{male} A Conepatus skunk in the ^{maize} corn field, ^{shot} a large ^{three} to which had a few grains of corn in its stomach. ^{was a} ^{species} ⁱⁿ ^{equaling} ^{color} ^{more than collected} Shot 3 species of hummers to-day. One ^{very} large Patagonagigas ^{one}, a size ^{of a} barn swallow; another medium sized one was deep green with violet gorget. ^{Two specimens} Shot 2 of the large white tailed hummers. I have seen ^{two} ^{three} ^{other} ^{hummingbirds} 2 or 3 other species here besides these. Shot a dove the size and color of our turtle dove with ^{similar} pointed tail.

April 19th. ^{We} Caught a long tailed, small bodied mouse which looks new to the collection but caught nothing else except a lot of Euneomys

112

I have now collected about 20 species of birds. Shot a large wren to-day and a yellow billed slate colored sparrow which are new to the collection. The Indian farmer brought in a snake ^{Cophis} ~~Liopis~~ alticola (same species as those from Huarcocondo) and a lot of toads to-day. We had a thunder shower in the afternoon.

April 20th. Another ^C Conopatus was trapped in the corn-field. This one was also a male and had its stomach crammed with ^{maize} ~~reip~~ grains of ~~corn~~. Caught an opossum ^{of the genus D} ~~also a large~~ Didelphis. This one was a female but without young or ~~any~~ food in its stomach. Caught several of the long-tailed small bodied mice and also a short-tailed Rhipidomys like species. ^{I collected} ~~Shot~~ several new birds; ^a ~~the~~ long-tailed small ^{bodied} ~~hummer~~, a slate colored flycatcher and a blue grosbeak. Last night I went headlighting down the canyon as far as the next ^{maize} ~~cornfield~~ but saw no mammals. ^{We encountered three} ~~Saw~~ ^a night jars, one of which I shot in the road a few yards from me. The others were ^{seen} ~~were~~ on clay cliffs. None of the hummers show by their sexual organs that they are nesting nor do the parrots but the finches, doves and flycatchers are breeding. *have these organs enlarged and*

April 21st. The night was very cold but no frost fell. Caught ^A ~~another~~ female Opposum ^{was trapped} ~~in the cornfield~~. This ~~poor~~ ^{specimen} one was nursing but had no young in her pouch. ^{Her} ~~Stomach~~ contained only a few leaves. Saw the same pair of torrent ducks on the river ^{again today} and shot at them both but ^{did not succeed in bagging} ~~could not discover any~~ wounded. They refuse to fly but dive when frightened and swim down stream under water at a great pace for long distances. I know of no other bird which has ^{the ability to swim} ~~this habit~~ in such a dashing torrent as these Peruvian rivers. ^{We} ~~Failed~~ to secure any new birds or mice to-day.

April 22nd. ^{The day was quite uneventful.} Caught ^{four} ~~Only~~ 4 small mice of same species as previously. ^{were shot} ~~Shot~~ No new birds. A condor came down close to camp at noon but did not alight. ^{were captured}

April 23rd. ~~Caught only 1 mice in the traps to-day.~~ We broke camp at 2:30 ^{P.M.} and moved in to Ollantaytambo where we arrived at 5:30 ^{at our base station of Yagueribmasi where I joined Dr. Bingham and several other members of the expedition}

113

The journey down the canyon of the Huarocondo was interesting. A stretch of 3 miles of straight walled canyon without fields or human habitation extends from the junction of Huispang Creek to near the junction with the Urubamba River. I saw no new birds or any evidence of mammals. The ^{rock} formation was a redish sandstone or slate. The sides of the canyon ~~are~~ ^{were} ~~bushy~~ ^{covered along most of the way}. On the floor of the canyon I saw many bushes bearing bright yellow pea like flowers on long slender leafless twigs, the spanish broom, ^{Spartium jussium} as soon as we struck the Urubamba valley we encountered a strong breeze blowing up the valley. In the valley near the road I saw much cholla ^{a growing} cactus on hillsides and many pepper trees. The sides of the valley are very precipitous ^{being} and broken by rocky points and ledges, ^{and very deep}

April 24th. I remained in Ollantaytambo at the station sorting outfit and drying specimens. During the afternoon we had a heavy rain shower. In the garden are several wild cherry trees in fruit and also a native walnut. ^{tree} ~~Saw~~ ^{was seen} a single bat at dusk flying about the houses. ^{four station at Yanquihuasi}

April 25 - 26th. ^{De} Continued work at the station on the arranging of outfit and the cataloging of the specimens thus far collected.

April 27th. ^{Narciso, Tomas, and I} We left Ollantaytambo with pack train and outfit in the morning for Torontoy at the head of the Urubamba canyon proper to hunt bears which ^{were then} ~~are now~~ reported to be feeding on ^{on ripe maize} ~~ripe corn~~ in the fields. I saw no new birds on my way down except a swallow and a short tailed hummer. The Scenery was fine with many views ^s of snow clad ranges on both sides of the valley. Rock formation ^{the} chiefly granites. Just on leaving Ollantaytambo I saw two of the gigantic tierd stones laying in the road where they had been left centuries ago by the ^{Diace} ~~Acacias, Stenjobilis~~ ^{bordered} and pepper trees ^{along} the road. Made camp well down the canyon at the lowest ~~corn~~ ^{maize} patch near the mouth of Torontoy Creek which has snow covered ranges at the head. ^{along} ~~Much~~ forest is to be seen high up on the mountain side at 9,000 - 10,000 feet.

The depth of this plain is 4,000 feet on an average

below the fortress of Ollantaytambo.

114

April 28th.

^{climbed} I ~~went~~ with Narciso and a small boy as guide up the mountain side to the ^{maize} corn-field where bears are said to come for ^{maize} corn. It was three-quarter of an hour's journey up the steep side toward the snow fields along the bed of a small brook. We found no sign of bears; neither tracks, dungs or ravaged ^{maize} corn so ^{we} returned with ^{out setting the} traps. Above the corn-^{maize} fields was a heavy forest of small trees and tall bamboo. This forest was very moist and extended up to the snow ^{fields situated} apparently at 11,000 feet, ^{where} ~~when~~ we ascended it was perhaps ^{above sea level} 9,000 ~~feet~~ or 1,000 feet above ~~Torontoy~~. ^{We} Saw very few birds. On ^{the} way back Narciso and the boy examined a bat cave which ^{well known} to the boy ^{where they} ~~know~~ and found a few bats and several human mummies in the contort^{ed} bent up ^{characteristic of} shape ~~common in the~~ Inca mummies. In the ^{afternoon} P. M. I sent Martin back to Ollantaytambo with a note to Dr. Bingham reporting the discovery of mummies. ^I Shot a red headed warbler and saw several others in ^{the} upper forest. ^{We} Also ~~shot~~ ^{secured} three of the large green parrots which feed in the ^{maize} corn-fields. The little green paroquettes were also seen. Have seen no other ^{new to me} birds but several night jars have been heard ^{calling} at dusk.

April 29th.

~~We caught nothing in the mouse traps set about the Inca walls.~~ I went to the bat caves with Narciso in the ^{afternoon} P. M. after Tomas returned from ^{where he had gone to obtain information} Colpani. ^{We} Heard a bat or two squeak but could find none. ^{There were} Saw ^{back} about a dozen human skulls with other bones at the cave mouth. Farther ^{we could see} ~~were~~ others. A condor flew close to us several times as we were ascending or climbing up the cliff. The parrots I shot yesterday had their crops filled with fresh ^{maize} corn.

April 30th.

^{we} Caught a small Marmosa in a mouse trap at the base of the Inca wall also a ^{small} young mouse. Went up to the forest at the head of the ^{ravine} ~~gully~~ above the ^{maize} corn patch and set 40 small traps in the moist forest. Most of trees are a thick leaved magnolia like growth with white waxy flowers. Shot a large blue jay and a black, red breasted flycatcher.

May 1st.

The traps set high up in the ⁱⁿ Montaña yielded a ~~large spe-~~

^{new genus + species of shrew-possum, Prolestes inca}

concerning the occurrence of spotted black bears

115

^{The body} ~~specimen~~ of ~~caenolestes~~. ^{as in the family Didelphidae} It was uniform brown in color and was an old male with large testicles suspended by a very small peduncle. The teeth in shape and structure are very similar to those of a shrew which the animal ^{practically} is as far as habits are concerned. It was caught in a moist ^mloamy forest amid moss and ferns in deep shade. The stomach contained insect cases and legs. Caught several dark ^{ne}Eucomys very different from ~~those~~ others secured at Huarcocondo, also a long tailed Oryzomys new to the collection. At the Inca ruins I caught ^athe very long tailed Oryzomys and also a large male Didelphis in a steel trap. ^{Mr. Bingham} H. B. and Hardy came in with an outfit ^{of packing cases} late in ^{afternoon} the P. M. prepared to collect the ^{human}skeletons in the bat cave.

A thunder shower blew up at 4 P. M.

May 2nd.

I caught ^{three specimens of Orolestes inca} 8 more ~~caenolestes~~ in the high Montanya; one was a female but there was no evidence of a pouch. ^{this specimen} The tail does not appear prehensile as it is not smooth at the tip but slightly hairy and perfectly straight. Caught a large Ochro-^{colored rat}ceous ~~not~~ the size of a house rat. ^{and apparently a member of the genus} H. B. and Hardy went far up the wooded creek to the base of the large glaciers near the summit. They reported a good trail and ^{two}huts half way up. The Mines for which the trail was built are at timber line. I shot ^{three} 3 new birds in the Montanya, one a large Penelope, one ^{two}wren and 2 golden crested flycatchers? ^{two}

May 3rd.

We packed ^{the}mules with part of ^{our}my outfit leaving tent and one chest below at Torontoy. Three of the mules got thru ^{without trouble}O. K. but the ^{three}3 last were shoved off the trail by their aparejos catch-^{vertical}ing against jutting rocks. These three slide down thru a ~~steep~~ cornfield into the creek and lost their cargoes on the way. ^{down the slope} They were cut up about the head and eyes but no limbs were broken. The men ^{carried}patched the loads the remaining 200 yards to the edge of the Montanya where we made camp. I visited the traps at 4. P. M. after we were settled. Two more ~~caenolestes~~ ^{species of} were caught, also a new large mouse or rat with a white belly

116

and ochraceous dorsal parts. ~~Saw no birds. Caught several~~
~~Eucorys.~~

May 4th.

I caught ^{three} 3 more ~~caenolestes~~ ^{Orolestes inca} in the mouse traps, one of which was a female. One was alive being caught in a small trap across the back. ^{without injury} The tail when examined ^{found to be} was not prehensile. This ^{specimen} ~~one~~ died soon after being taking out of the trap so I could not experiment with it. Caught ~~A~~ new mouse, a small dark bellied long tailed ^{was also captured} Oryzomys type. Shot 5 new birds; one a large wood ^wherver with white cheeks, a golden-backed black oriole like bird; a buff ^{or}throated ^ahummer, ^wand ^{and} Wren ^{and} also a fly-catching warbler with yellow underparts. I Shot another penelope to-day ~~also~~. Weather at night not as cold as Huarcocondo or Cuzco.

The aneroid received from Ollantaytambo register ^{ed} only 8,800 feet for this camp but I ^{am sure} believe it is at least 1,000 feet ^{higher} ~~low~~.

May 5th.

We caught no new mammals to-day, but ^{secured two} 2 more of the ochraceous bellied small mice and 2 more ^{more} ~~caenolestes~~ ^{Orolestes inca}. ^{large} Saw ^{large} a pair of green trogons with vermillion breasts like the Mexican species. I ^{were seen in the forest} shot one of the slate ^{colored} wood-pigeons to-day from a flock of ten. Some of the birds are breeding here. The yellow bellied fly catching warbler, the wren and the white bearded ^{wood-hewer} ~~creopen~~ show this condition.

May 6th.

^{Three} Caught ^{more} 3 more ~~caenolestes~~ ^{Orolestes}, one of which was alive and in good condition so I brought ⁱⁿ and put it into the ^{following} ~~following~~ lantern as a cage but it got out thru the top which I had thought closed. The tail when stroked did not show any signs of being prehensile. One of the two dead ones was an apparent female but immature like the other, ~~or else a very young male~~. I have not yet secured an adult nursing female altho I have ~~xxxxxxx~~ taken a half dozen old males. I secured two more of the small ochraceous bellied mice. Shot a new ^{hummer} ~~hummer~~, a buff tailed and buff winged ^{one}. ~~Saw one other this A. M.~~ Shot ^{also} a new dark blue shrike. Moved camp to-day to the huts built by the road cutters some 3 miles above ⁱⁿ in the heart of the Montanya. Tomas came up at 10 A. M. with 4 Indian ^{who made two trips and carried}

117

our outfit up in about 8 hours ^{there} for round trip. The camp is situated in a flat part of the valley just at its head with the glazier and snow banks above giving a magnificent view of the scenery. The sides of the valley at camp are heavily forested but very steep and rise some 2,000 feet above the floor. The creek is a quiet and level stream without cascades at camp. Most of the flat valley is covered by ^{agrowth of} bamboo, 6 to 15 feet high with small trees interspread. All the trees are covered by green ^{festooned by} moss and bunches of bromeliads ^{like} pineapple plants in appearance. ^{without doubt} Saw a toucan the long billed bird ^{reported} evidently seen by H. B. on his trip. ^{There was} Saw no bear sign in the trail but the men said there was a track in the shelter of a large rock. ^{lasts proved correct} The aneroid registers ^{at} 10,700 ^{feet} at this camp which is no doubt nearly correct. ~~The lower camp it registered only 8,800 feet instead of 8200.~~

May 7th.

^{were trapped} Caught chiefly Eumomys in the upper camp, only 1 Caenolestes and one large ochraceous rat, Thomomys. ^{being secured} Caught another Caenolestes at the lower camp and also an old female ochraceous rat Thomomys which contained a single large embryo. ^{yo we} Built a ^{new} trail around the rocky impassible ^a port and sent Tomas down ^{to bring} for the ^{two saddle} 2 mules. I rode up the trail about 2 miles above camp but saw no bear sign. Below the camp there is no bear sign only ^{a few} possible trails. I have seen no tracks or dung anywhere. ^{which could be attributed to bears} The country above camp as you rise is ^{progressively} much more overgrown by Bamboo. ^{whole} ~~All~~ The forest is choked with it and ^{along streams} thickets. Tree ferns ^{were} ~~are also~~ seen at rare intervals, some being 15 feet high but they ^{were} ~~are~~ always solitary. I saw the pair of ^t Trogans to-day ^{again} but did not secure ^{either} any. The ^m Montaña is purely tropical ^y altho it here reaches snow line, the birds, ^{derived} and mammals and plants are all from the hot ^{Amazonian} zone a closely related to those and ^{are} very different from the ^{in type} open grass land forms of the ^{cold} alpine Andes proper. There is not a single bird or mammal common to the two zones. They ^{forest growth is} ~~are~~ here a matter of slope and moisture and not ^t ^{except above 12,000 feet} altitude at all. The ^{confined to the} montaña is east of the Andes. ^{slope}

in origin

It forms an impassible

May 8th.

I caught ^{three} 2 more ~~Caenolestes~~ ^{Or}, one of which was a nursing female and I preserved it in alcohol. ~~No embryos however.~~
 The other ^{two} appeared to be females. ^{also} Set the bear traps ^{were set} to-day, two below camp and two above but ^{we} found no tracks or ^{other sign} ~~guide me.~~ ^{no} They were ^{mm} Set them on wide but tunnel like trails in the under-brush. ^{of the forest} Several nut-like or olive like fruits lay abundantly on the floor of the forest here but I have found no evidence of any animal ^{large} ~~eating any.~~ ^{such as bears} ~~Found~~ ^{was found} A night lizard under a rock at camp to-day which had the appearance of the Californian genus ~~Xantusia.~~ ^{I secured} ~~Shot~~ ^{ant-shrike} a beautiful tanager, yellow below and cobalt blue above. The Indians we hired as porters to bring up our outfit came up to-day driving their cattle to the near ^W pastures ^{which they had seen for the first time when engaged in bringing up our} ~~after we had fixed the trail where it was bad.~~ This is the first time cattle have been over this trail which ^{was} ~~road~~ recently built for the mine or prospect ^{situated at the base of} ~~near~~ the glacier above our camp.

May 9th.

The ~~four~~ large traps captured no bear or ~~any~~ other game which was not a great disappointment as no sign of any ^{large Carnivores} ~~canis~~ has been detected by ~~me~~ ^{us} here. Caught ^{Orolestes} Two more ~~Caenolestes~~ ^{were taken}, one a half grown ^{specimen} ~~one.~~ In the forenoon at 1 P. M. I started with Tomas for the snow fields near the crest of the mountains. We made timber-line or rather the lower snow or ice packs ^{during} ~~in~~ the form of glaciers in 2½ hours. The road was very steep and overgrown ^{by} ~~my~~ tall bamboo ^{for} most of the way. Half way up ^{at} ~~on about~~ 12,000 feet the bamboos ~~seems to~~ predominate with the forest trees scattered thru it. ^{at long intervals} It ^{is} an impenetrable mass 10 to 15 feet high ^{and} ~~It~~ stops altogether at about ² 12,000 feet, well below the forest belt which continues on to ³ 14,000 or ⁴ 17,000 feet in some places. There is no regular or level forest line, the glacier like snow fields descending far into ^{the forest} ~~it~~ in places. One of the commonest ^{pinnately-} trees at timber-line is a ^{prunately} leaved tree ~~Acaena ochreata~~ ^a a member of the rose family ^{with} ~~and has~~ rough shreddy ^{brown} bark. Some of the ^{Acaena} trees are 10 feet in diameter but ^{such} ~~these~~ are unusual. Another common bush was a small white

flowered one with ^{blue} huckleberry like fruit. Above the forest zone ^{and} ~~or~~ bordering it above the bamboo belt ^{grew} ~~or~~ heavy ^{mat} growth of tallish blue grass ~~comes the ground~~. ^{two} It is about 2 feet tall, ~~and about heavy and matted~~. Other species of grasses ^{were} associated with it. Flowers are ^{in species} surprisingly few ^{at this season} or absent in this zone. The trees near timber-line ^{were} ~~are~~ all draped by a heavy growth of green mosses ^{which} adding several inches to their real circumference. Runways of many mice were seen in the forest and also ^{blue} ~~about bushes~~ in the grass. Some ~~30~~ traps were set on ~~these~~ runways. Much deer sign was seen (tracks and dung) in the blue grass belt but no deer. ^{were to be discovered} No Bear trails or evidence of any sort was ^{quite wanting} ~~seen~~. Several wren like birds were heard and seen ^{on the zone above timber} and one was shot, a wren-tit or Synallaxis with a very long tail. I also shot a carron hawk ^(a closely resembling the eagle of Texas + Mexico) ~~vulture like one with naked yellow head and coloration of a caracara which it also resembled in size.~~

May 10th. ^{during} ~~Rained most of~~ the night a soft misty rain ^{fell} which continued ^{thru out} during the day. I sent Tomas down to Torontoy for the tent and the rest of the outfit. ^{We} Caught ten ~~Eunomys~~ ^{Orolestes} ~~nolestes~~ in the traps set down the creek. ^{but} ~~Did not~~ ^{have time to} visit those ^{at} at snowline. ^I ~~Shot~~ ^{three} 3 new birds to-day; a very small green throat-ed hummer, ^{an} olive flycatcher and a yellow warbler. Skinned the Carron hawk and found its stomach packed with large grubs. Saw a wood-dove to-day, a solitary ground species which I have heard hooting for some days.

May 11th. ^{the} This is first day since my arrival in the montaña that I have failed to catch at least one ^{Orolestes} ~~caenolestes~~. The traps set down the creek produced two of the large ochraceous rats, ^{accompanied by} ~~Thomomys~~ ^{Thomomys}. The Indians ^{with} Tomas and Martin came up at noon from below with the tent and other outfit. ^{and} They finally agreed to go on up the mountain to snow-line with my outfit so I packed my kit and went ^{along} with Tomas. We met the Indians coming back they having deposited their loads at the top of the trail. We

reached the top at 5 P. M. and made the best camp we could in ^{on} the steep side hill there being no ^{level} flat places large enough even for a tent, ^{which was 10 x 12 feet}.

May 12th. The morning broke clear and cold. I visited the traps which had been set for three days ^{at timber-line} and was surprised to find 4 ^{Orolestes} ~~caenolestes~~ ^{at timberline}, some 10 ^E ~~eunomys~~ and 4 specimens of a new mouse, a ^{Oryzomys} with long fluffy hair, small body and long tail. Martin came up in the early morning for the mules and ^{worked} ~~half a day~~ digging ^{up} a place on the ^{steep} side hill for the tent. ^{and} Marcisso came up with some more outfit in the afternoon. During the day I heard very few birds, and saw only one or two warblers one of which I shot. ~~El Duencyo de Torontoy says the name of this is Pampacalla.~~

May 13th. ^I ^w Went out with ^{the} rifle and Tomas along the edge of the forest on the south side of the camp but saw no deer. ^{not a large game} Shot ^{three} new birds ^{more collected} to-day; ^{red bellied tanager}, ^{fly} ^{catcher} like Traill's and a chestnut-breasted warbler. ^{Head} a robin in the forest but did not get sight of it. ^{Caught} 2 ^{caenolestes} in ^a grass meadows above camp. Sent Tomas down to bring in the trap ^{at} lower camp ^{from} which he returned with ^{Or} ^{an} ^{the} ^{caenolestes} ^{like} ^{timber line} species ^{and} ^{several} ^{Eunomys}. ^{Our camp was visited by} ^{which} ^{coated}

May 14th. ^{We} ^{had} a heavy hoar frost ^{on} the grass last night, ^{the first since} coming here. When we returned at 9:30 ^{a.m.} to camp we met ^{Mr. Bingham} H. B. who had come up from Torontoy to visit us ^{and give us the news} with some extra food as a gift. He reported seeing 2 bears ^{in the country lying} between Mount Salcantay and Machu Picchu at ^{the} edge of timberline. One he photograph ^{at} some distance ^{first} and finally got within 100 yards of it. He saw many trails of bears and a cave where there were tracks. ^I decided to break camp and return to Ollantanytambo at once and go in search of ^{the} bears, ^{he} ^{saw}. Shot 2 new birds to-day, one a speckled wood-hewer and the other a gray one with a red crown. ^{Caught} 3

^{Three} ^{more} ^{Or} ^{caenolestes}, 2 ^{Oryzomys} and several ^{Eunomys}, ^{new} ^{trapped} today.

May 15th. Another ^{frosty} night, ^{minted} ^{us} Took up the traps and prepared to de-

ascend to Torontoy. ^{Or} Caught only one ~~canolestes~~. They have

chiefly been taken in the open grass country here ^{at timber-line} rather than in the forest. The 6 Indian porters came up at noon and we left ^{the camp} with outfit at 1 P. M. At the two huts I found Tomas with a very large Didelphis which had sprung the lower bear trap. ^{+ not caught} Shot ~~no new birds and~~ only ^{bird was seen on the way down} saw one new one with certainty. Day clear and warm.

May 16th. ^{up the Urubamba valley} We broke camp at Torontoy at noon and moved ⁱⁿ to Ollantaytambo where we arrived at 5 P. M. Saw no new birds on the way. Everywhere the crested sparrow was common and many robins were seen hopping about the road. Soon after I arrived ^{Mr. Bingham} H. B. and Markill ^{above Selque} came in from a trip across the river to the top of the range. Markill brought in a female aguemal deer he had shot. They had seen a herd of 8 at short range but the rifle sights were damaged and only a female ^{was} secured after several shots at ^{a buck} male with fine horns. ^{had failed}

May 17th. ^{18th} We ^{cataloging} remained at Ollantaytambo ~~skinning deer~~ and drying specimens.

May 19th. ^Y Left Ollantaytambo at 9 A. M. for the bear country above Matchu Picchu by way of Huallabamba. ^{mb} Took Nardisso, Tomas, 2 Indian guides and 5 pack mules. ^{with me} Camped first night ^{we camped} above ^{the ruins} Zuento. Trail on south side of river very rough. ^{of Patacoto a short distance} Saw many birds along route, ^{the} turtle-dove, robins, crested sparrows, ^{grows} etc. ^{loves} Saw ^a short tailed eagle, Geranaetus, and several sparrow hawks.

May 20th. We broke camp at 9 A. M. and reached Huallabamba an hour afterward. Then we began the ascent ^t of the Huallabamba creek crossing the stream bed or wading up it under ^{overhanging} bushes and ^{or} winding about among the trees. At 1 P. M. we emerged from the tree belt and began the ascent to the pass of Huayres ^{was} 13,800 feet ^{in altitude} along a well made Inca road ^{having} with a steady grade and ^{built} several feet in ~~length~~ width. The country here was entirely open,

and grass covered. We saw no deer or other mammals however or signs of any. One of the mules fell off the trail and rolled 100 feet down the ^{steep} grass slope, ^{not far from} near the summit. We finally reached the pass at 2:30 ^{P.M.} The descent on the ^{north} east side was very rocky and steep. At 4 P. M. we made camp at the bottom of the ^{Harayuro} Valley at 11,000 feet altitude. ^A across on the opposite side high up could be seen the ruins of a few stone houses, ^{the fort of Runcarocay} Cedrobamba where H. B. ^{Mr. Bingham} had camped a week previous. I saw a few wren^s and Synallaxis near the pass. At camp I shot a ^{new} ~~more~~ flycatcher, ^{of a warm wood brown coloration.}

May 21st. We had ^{were visited by a} a thunderstorm during the evening ^{which lasted} and this morning the mountain tops were ^{with} whitened by a light fall of hail or sleet. ² Saw quite a large number of birds, ^{were seen} but the floor of the valley is filled by such large rocks that hunting was dangerous to limbs. ^{and shooting was abandoned for the time being} We reached the old ruins of the fort at 10:30 ^{A.M.} and then had to unpack and carry all the loads over a ^{vertical} steep place ^{in the trail} by hand. We therefore did not reach the pass until noon or rather 1 P. M. Just below the fort there was fresh bear dung in the trail composed of blueberries which were abundant on the hill sides and just ripening. Tomas said he saw a large bear just before we reached the fort but I was a few yards behind and could not see it. ^{when he called to reach the time} At the pass I saw more bear ~~dung~~ but old and also some down the trail near the lake above Cedrobamba ruins. We reached Cedrobamba ruins at 4 P. M. and camped where ^{Mr. Bingham} H. B. and his party had constructed a grass hut. ^I Shot a green hummer of a different species than the common one at ^{Harayuro} fort.

May 22nd. ^I Went with the Indian guide to the ruins of Corihuayrachina where ^{Mr. Bingham} H. B. saw the 2 bears 10 days ago. We sighted one some little way beyond just below a ridge within about 50 yards of ~~us~~ standing erect. ^{and searching for us the bears were making an effort} I opened fire with the 22 H. P. and hit the bear twice in the side and thru the kidneys but it loped away toward the forest and I shot two more times, ^{as it was fleeing} one shot just slitting the skin on the side. It disappeared into heavy mountain

the forest down a steep hill. We followed but could find no

bloodspoor and finally I gave up but sent ^{one of} the Indian son to

seek for it. In ^{a few} minutes ~~or 10~~ he yelled to us that ^{he had found} it was

dead just below where we had ^{been} quit. The two men ^{giving up on search; carried the body} brought it up

to the open country. It weighed about 150 lbs. or less and

was in lean condition. ^{The bear} It was a female without embryo or

milk. ^{in the mammary glands} The stomach contained only blue berries, ^{an abundance of} Vaccinium of

which there ~~were~~ many ripe on the hillside. This bear was ^{shot}

^{leading to Matchu Picchu Peak} just on the main ridge and only 50 yards from the upper edge

of the forest at ^{an altitude of} about 13,000 feet. ~~altitude.~~ There were no

tracks or fresh dung of bears ^{in the immediate vicinity} about but I saw a single lot of

~~old dung.~~ Apparently it is only very rarely that they leave

the montana forest and then only where ⁱⁿ blue-berries are ripe.

^{from this spot} We could see the Matchu Picchu Peak and some 20 miles of open

grassland ^{intervening} but saw no other bears or any evidence of any in the

trails. As the Indian was carrying the ^{skinned} body, a condor

have in sight ^{attracted by the meat} and wheeled above us. Later a gray ^{chilian} eagle appear-

ed and drove the condor away. The trail we followed was an old

Inca road well ^{much of the road was} built along the cliffs, ^{often} 3 feet wide and built

upon a vertical ^{hanging} wall 10 or 15 feet in some parts. ^{high} Scarcely any

birds were seen or heard altho the road lay thru forest and

glades amid a great variety of vegetation. ^{the was} Day open and sunny and

The bear was seen at 11 A. M. in bright sunlight. No deer tracks

or sign was seen and they are said not to occur here altho the

grass land is extensive. ^{There is} ^{prevalence of} Absence due to the moisture perhaps

as the dryer land about Ollantaytanbo supports many.

May 23rd.

We went out on the back trail to the Huacruro valley ^{in a search} for

bear where Tomas had seen one on our way into ^{Cedrobamba} this camp. We

travelled over the grassy ridges carefully but saw none, ^{the} only ^{evidence}

^{encountered being} a pile of old dung ^{near the fort of Rucarcay} ^{We found a few} tracks, ^{or and}

trails ^{of bears} in the grass leading to the montana forest. Saw ~~some~~

~~deer dung in one of the tracks.~~ Two condors flew about over us

as we sat ^{resting above} the fort on the grassy ridge. At 11 A. M.

The granite rocks of a great cliff
followed - notched formed the
on a steep of snow

drove up the valley and obscured
clouds or mist ~~covered~~ the country and we returned to camp.

In the afternoon I went bird shooting near camp where I secured 4 of the red-bellied tanagers, one ^{olive} ~~trail's~~ flycatcher, one of the brown flycatcher and a small ^{species of} humming bird.

May 24th.

We went to the ^CCaorihuayrachina ruins again to-day for bear but found none or any recent evidence altho we went ^{farther} ~~much~~ for them towards Matshu Picchu peak than last trip and remained on the summit watching until 3 P. M. I sent the Indian ^{at noon} back for the mules and he reported seeing a bear just below the ruins at the upper edge of the montana which bolted back into the forest before he could ^{get under cover} ~~turn about~~ all of which was apparent fabrication. I was struck to-day by the great abundance of small tree ferns at timberline bordering the grass country. The real timberline tree here is ⁿAcaera which occurs high up above the other montana trees often near the snow. Mt. Salcantay was clear of clouds most of the day. ^{a very unusual sight} The other Indian, ^{Jose}, visited the rat traps in the Huayruco Pass (~~east~~) and brought back one ^O~~Saurolestes~~ and one Oryzomys. These traps were placed at 13,000 feet under large boulders well above the montana. The rock formation everywhere here is gray or whitish granite. Two condors flew about us to-day as usual, ~~one of which I shot~~ ^{at} ~~at~~ as it was perched on a cliff but missed it.

May 25th.

^{old} We ^{large} ascended the Inca trail to the Huayruco Pass but saw no bears. Set one ^{large} trap above the fort on an old bear trail at the edge of the forest and another trap at the pond half way up to the pass. I caught in the rat trap ^{an} only ^OOryzomys and a Synallaxis. Fernando, the ^{old} Indian, ascended the high peaks above camp and reported seeing viscacias and seeing deer tracks, but no bear sign. Day beautiful ^{ly} clear all day, until 5 P. M. when the clouds drifted up ^{from} the Umbamba valley far below.

May 26th.

I remained at camp skinning birds and small mammals. The Indian, Jose, visited the ^{two} bear traps and the rat traps in the pass but brought in only a ^O~~Saurolestes~~, a ^EEunomys and a slaty wren. I climbed up to the ruins of Cedrobamba and found that

Dr. Bingham's

H.B. party had uncovered the principal buildings from plant growth. The stone work is very crude consisting of rough stones set in clay mortar and not joined. The chief building had ^{nicely} six windows facing the cliff or ^{valley} open side and ⁿⁱ watches on the mountain side. A dozen small rooms or so covered the remaining building. The whole ^{fortification} affair was built on a steep promontory projecting into the valley. There ^{is} was no water ^{now} nearer than the creek where we were camped some 100 yards. below the fort. ^{But here} remains of an asequia or water ditch could be seen on the hillside leading to the city. This ruined structure of Cedrobamba must have been simply an outlying fort for Machu Picchu as there is no evidence here of cultivation; no traces or clear land of any sort. The fort at the pass in ^{the} Huayruro valley was of the same ^{nature} sort apparently. ~~I set 18 traps along the Machu Picchu trail but caught nothing.~~ ^{The} Weather ^{was} clear all day, ^{and} Salcantay ^{was} being unclouded. Usually the afternoon are cloudy.

May 27th. We Went out for bears to-day to ^{Cerro} Huayrachina ruins but saw none. Set a bear trap on ^a the ridge just above the ruins where Tomas said he had seen ^{a bear} one yesterday. Day clear and bright. I Caught 2 ^{Or} ~~Caenolestes~~ ^{near} along the trail and Jose brought in a large Rhipidomys and a young Euneomys. ^{from Puncarocay} Anderson and Maynard came to ^{Cedrobamba} the camp in the afternoon and made camp just above mine. ^{two} They expected to spend 2 weeks mopping the country.

May 28th. We Went up to Huayruro again but saw no bears. Went along ^{I followed} the ridge south of camp looking for viscachas but saw none or any signs. ^{I saw} 3 carron hawks in a party, also several small rock finches new to me. ^{Or} Caught ~~A~~ ^{today} ~~Caenolestes~~ and 3 Euneomys ^{were caught} in the rattraps. In the evening went up to Anderson's and Maynard's camp for dinner. Anderson said he saw many bear skins ^{the village of} at Huairo which came from the surrounding hills. His locality for coyotes is one day south of Cuzco. ^{at Puncarocay} Caught ^{ant-bird} A peculiar short tailed thrush with long legs and ochraceous in color in a rat trap ^{near camp today} a special of ant bird. ^{a similar bird} Saw no other a few days ago in the forest.

bed temporarily as sleeping places for a few days and then move ^{away to} out to some other place. They don't seem to have any definite living place but move about ^{freely from} to one part of the forest to another. All the dung I have seen has been blueberry in substance, ^{but of various ages} although it is not at all fresh. ^{It is evident that} Perhaps the blueberry ^{ies} remain ripe for several months or half a year ^{giving the} so that ^{bear a long feeding} the season is long.

June 1st. We saw no bears to-day. Thus far none have come to any of the four traps baited with corn, ~~and veragues~~ vegetables and dried apples. Day ^{The day was} party cloudy with ^{but} little sunshine. shot one of the small bicolored wrens like ~~syallaxis~~ similar to the one I caught in a ^a rat trap at the pass. ^{a few days ago} They have a peculiar tree-froglike note which is very deceptive. Shot a new wren a brown one with white shaft streaks, in appearance ^{or ventriloquistic in quality} like a ^{coloration resembling} newly ^a hatched ^{grouse} goose or partridge.

June 2nd. It ^{was caught today} Rained much of the morning. Caught a large Didelphus or opossum in a steel trap and ^{I had} photographed him. After skinning ^{mayward} ~~him~~ ^{from his camp} ~~Anderson~~ came down and asked for the meat for a roast. When roasted ^{the opossum tasted} he was very tender and delicious. ^{I saw} a bat flying about ^{mayward's} ~~Anderson~~ tent a duck as I was dining with him. This one had a slow flight like Myotis. ^{and represents the} ^{allitudinal record for}

June 3rd. ^{we visited} Went out this morning to the bear trap in the cave or large ^{on the way we} ~~rock~~ but it had not been disturbed. flushed another large woodcock in long grass ~~near creek~~. Fernando flushed a ~~Traven~~ Tinamou on a grassy side hill which flew up with loud cackling cries. Shot a pair of crested mallards on the pond above camp. ^{which we roasted} ^{for dinner after}

June 4th. ^{we} Took a trip to ^{match} ~~Notches~~ ^{peak} ~~Picchu~~ but saw no bears about ^{preserving the skins} ~~Corihuyra china~~ ^{from the ridge we} could look down on ~~Notched Picchu~~ ruins, but could see only the walls with a good glass, ^{the} the rest ^{our field} ~~been~~ ^{as city generally} being ^{brushes} overgrown by trees. San Miguel bridge was in sight ^{directly} below us, and the river as well for a good distance. Above the bridge, ^{the} the river consists of ^{and bordered by} quiet water with sand beaches while below there are ^{running} foamy rapids and large boulders. Saw a species of large green parrot in the forest also a large blue hummer, and several great condors ^{were seen} below us ^{above} whelpling over the Intihuatana Huts ^{for below us} at the ^{in the Umbamba valley} base of the trail. Day beautifully clear and warm not a cloud

^{to near the view of}
appeared ~~over~~ ^{near} Salcantay until 2 p.m. ^{late afternoon}.

June 5th I climbed up to the pass above Runcaraccay Ruins but saw no bear. ^{at the pass} Hunted ~~birds~~ ^a shot a pair of the slaty finch, ^{as} the female of which is light streaked like ^a ~~Carpodacus Californians~~ ^{the Purple Finch}. Shot two species ^{of lark-like} ~~ferk~~ wrens having habits and appearance of horned larks. Shot two orange-throated ^{yn} ~~smallaxis~~ ^{were also secured} all above timber line. ^{Most of these birds are confined to the region above timber line which is the region they are confined.} Saw 2 carrion hawks ^{were seen} also in

^{In the} afternoon ^I shot a black chinned hummer near camp. Day clear and bright all day without clouds. ^{similar to the weather of yesterday.}

June 6th. ^I Shot a grey chatterer and a yellow fronted flycatcher ^{both of our collection} which were new birds to me. Day clear and bright.

June 7th. ^{Maynard} At a.m. moved camp to Coorihingrachina so I went over ahead of ^{his pack train} ~~them~~ and changed the bear trap to the place where I shot the bear. ^{set near the trail ruins} Saw many black swallows, one of which I shot after ^{several} attempts. ^{were seen associated with the swallows} Saw two white-throated swifts also. Day partly clear, ^{I went skinning} ~~went skinning~~ at night near camp but saw nothing. The loud voiced bird was heard but not seen. It is probably a species of owl.

June 8th The Indians reported ^d seeing viscachas ^c above the ~~Laguna~~ ^{above the small pond} in the rocks, so I went up this evening and set some traps. They said they had seen three ^{viscachas} sitting together on top of a large rock early in the morning. Caught ^{Oryzomys was secured} a small yellow Dipsa ^{a species similar to one taken at Toronto} for the first time near camp. Shot a large green hummer and a large brown flycatcher ^{both of} which were new birds ^{to the collection}. Day chiefly cloudy but without mist.

June 9th ^{The} Day ^{was} rainy and foggy but ^{it} cleared at dusk, ^{which allowed me to go} ~~went out shining up~~ the trail ^{at night} to the viscachas rocks but ^I saw nothing. The Indians assert ^{that} ~~they~~ ^{viscachas} do not come out at night. Caught a ~~Cacrostes~~ ^{Cacrostes} by the feet ^{and} in a steel trap which I kept ^{it} alive in the ^{a sage hoping} lantern to photograph ^{it} but it died during the night having ^{ensnared} tied itself in the threads of tow put in for ^a nest.

June 10th ^{Went} viscachas hunting in the early morning but saw none. ^I Shot a deer with the 22 automatic which we flushed from a tongue of forest above the ~~laguna~~ ^{ascending through the}. This deer ran down hill and then returned ^{up} the trees and passed us at 150 yds. I hit him ^{or} 8 or ^{ten} 10 times breaking his back at the loins with one wit of the

tiny bullets

last shots. He ^{was} a buck with shed horns and ^{his} milk molars ^a were still in use. ^{The} Stomach contents leaves of a bush, a vetch and ^{Solanum} and a small ^{unidentified tree but} ~~tree~~ no grass. ^{on the afternoon} condition of body lean. At 8:30

Fernando reported a bear below the Cedrobanbo Ruins so I sent Tomas to verify ^{the discovery} as ~~this~~ Indian is a colossal liar. He reported a bear and ~~I with~~ Maynard Tomas, and Fernando ^{and I} set out after ^{it} him. The bear was feeding in the open grass country just below ^{a clump} an island of trees. The day was partly ^{overcast} cloudy.

The animal

He moved about very little so when we arrived near him he was still where we had first seen him. He however had stopped feeding and ~~remained~~ for long intervals looking in our direction but he did not see us ^{altho he} but may have heard us. By

wriggling ^{thru} the grass when he was feeding I managed ^{accompanied} with

by Tomas to get within forty yards of him, ^{but} when I looked up

he was ^{nowhere} in sight. Soon he appeared on a rock looking ^{down} at us ^{me} and I ^{fired hitting} ~~shot at~~ him full in the chest with the 22 high power ^{bullet}.

He fell off the rock ^{apparently dead but} when he ^{again} appeared 150 ~~yds~~ yards

away on the other side of a small ravine. ^{recovered himself soon and} I shot at him

several times ^{as he fled} more but nothing ^{shots} seemed to take effect and he

finally loped off over the ridge ^{following an} on the old Inca ^{road} road to the

valley beyond ^{next} outlay. We examined his tail and found speckles of

blood so we were sure the first shot ^{at least} took effect. Some of the

men from the ruins saw him go over the ridge and they came ^{assisted us to} over and hunted for the trail but it was dark in an half-hour

^{and} so we failed to find him. He appeared to be a fine large male

twice the size of the ^{female} shot ^{several days previously} ~~one~~ ^{the} without any white on face or

throat ^{and the} nose ^{was} broomlike ^{He was} our ~~an~~ black bear.

June 11th The two Indians and Tomas spent the morning and ^{part} put off the afternoon looking for the bear's trail ^{at the place} where he was seen

last crossing the ridge into the next valley. They found ^{no trace}

^{of him} nothing however only old trails, ^{W2} and some dung. Went up to the

Laguna ^{bird hunting and} ~~where~~ I shot a blue warbler and a greyish hummer new to the collection. Caught another large ^{opossum} to-day.

Weather clear and bright all day.

June 12th Moved camp a half mile to the ^{web m} ^{from which} ~~Pampas~~ where there is a fine view of all the bear country lying south-west of Cedrobanbo ^{m a}

June 17th. Moved camp in the morning to a little beyond San Miguel bridge in a pleasant green spot away from the road. ~~Many~~ ^{many} birds ~~many of them~~ new to the collection. At dusk I ^{high} saw many bats about camp flying ^{high} light and swift. In appearance ^{resembling the} they were like a free-tailed ^{genus} Mollossus form of some sort.

Several of the mules came in this morning with large blood blotches on their withers and necks. Richart who lives at the bridge ^{but} and cultivates fields ^{far} above at ^{the ruins of} Notches Picchu reported seeing a bear almost daily at his cornfield. ^{also} ~~an~~ ^{reported the presence of a wild cat near} ~~oulet~~ at his house which had stolen chickens. ^{his} Recently.

June 18th I shot a great many new birds to-day at ^{camp near} Richart's ranch on the ^{margin} river edge. Eleven new ones to-day and 2 yesterday most of ^{species of} these were flycatchers. There were two hummers ^{however} and 2 Vireos ^{two} and a ^{Shot 2 specimens of barbels also, caught 2 large} ^{species of} ^{two} ^{rats} ^{in the forest and under boulders bordering the river. At} dusk shot one of the large ^{SSU} Moloss or free-tailed bats. There ^{was associated with these} is a smaller variety but ^I could not hit one. All these bats ^{are very difficult to shoot} fly with great speed and have used many shells to get the first one. ^{The} Day ^{was} clear and warm ^{similar to} like yesterday.

June 19th I sent Tomas and Jose up to the ruins of ^{Ma} ^U Notches Picchu with a bear trap which they set in the corn field where Richart ^{has} seen the bears. They reported ^{seeing} some tracks and dung. The Indian who is living there said that no bears had been seen ^{this week} but ^{that an old female} ^{and a male} ^{was living} ^{with us} in the vicinity a ^{few} months ago. I shot several new birds to-day including ^{specimens of} the large andean gull, a white crowned robin and a blue and yellow warbler. Richart ^{which he shot} brought in a green jay from the ^{Notches} ^{Picchu} trail. Day clear and warm. No mounds secured in the traps. ^{today} ^{mammals were}

June 20th ^{Birds were abundant and I collected five} No mounds secured. Shot ⁵ new birds this morning in an hour. One was a peculiar mint ^{like} yellow bird with a broad ^{like} ^{bill} ^{the} ^{today} ^{tyrant} flycatcher. ^{Another} ^{was} a white-throated finch. a blue headed finch and a rufous winged ^{Syrallaxis}. Day clear and warm. Remained in camp ^{most of the} nearly all ^{afternoon} day skinning birds making a total of 25 skins ^{at dusk} for the day but I had to quit ^{with some} 8 or 10 left to do.

June 30th ^{June} Jose reported ^{finding} one of our mule ^{pastured} on the mountain side above Intihuatana with broken leg ^{this morning} so I went down to investigate and found the large Fulvipes mule ^{one of ours} with his hind leg broken just above back ^{the back when it could not be bandaged} so I had to shoot him. The accident was thought to be a fall on the hillside but no evidence of how it occurred was available. ^{due to} ^{me} ^{no} plausible reason could be discovered to account for the injury.

July 1st ^{July} ~~June~~ 1st Maynard ^{departed} left with Hasy and Ford for Ollantat noon. Yesterday I shot ^{three} black azis, a new giant kingbird and a new green tanager or callistes ^{near} at Intihuatana.

July 2nd I nd Remained in camp all day cataloging ^{mammals} mounds and drying ^{specimens} floor tent. Tomas ~~was~~ and Fernando climbed up to ^{watcher} Notches Picchu and set traps for ^{mammals} rats ^{near the ruins}.

July 3rd. This morning the large brown mule was brought in with his head much swelled and blood dripping ^{slowly} from his nostrils. The men said he ^{suffering from a} was snake bit on the nose. I lanced ^{the} two small blood spots on his nose. He ate corn and seemed in no great pain. ^{but I had no confidence in such treatment} I shot a new bellied tanager. Weather clear and warm. The effect on the mule of the ^{snake venom} makenenour in the afternoon and evening was labored breathing ^{evident from his} due somewhat to blood in nostrils ^{and} and restlessness. ^{that is} He is lying down and then rolling over and then rising again. In the afternoon Tomas and Fernando returned from M. P. with ^{watcher Picchu} ^{two} Euneomys and usual Oryzomys.

July 4th The mule was still alive ^{this morning} and breathing heavily with a little blood still flowing from the nose and mouth. He moved about ^{some} 100 yds in the night. ^{or during} at 4 P.M. he become restless and walked about finally lying down and dying near the camp. He did not however at any time go into convulsions or show ^{great} much distress. His breathing was labored and blood flowed from his mouth in small drips constantly and he took ^{during the whole 40 hours of his illness} no food. From the time he was bit to his death was at least ^{scarcely any} 30 hours. Tomas brought down another Euneomys from ^{watcher Picchu} M. P. Shot a large Mollassus at dusk.

July 5th Rained all night, a quiet down pour. At noon Martin and Huseo ^{passed their camp} ^{San Juan} came in on way to Sarts. to cook a dog found one of the river edge bats. I shot last night. ^{it proved to be} Inras a brown Saccopteryx and I rescued it from him. T & F caught ^{upon examination} several Euneomys and

were trapped ^{matchin} a small Oryzomys at Natches Picchu. by Tomas + Fernando.

July 6 Rained again ^{fell} during the night. I went out shining with the ^{large gun only} light but saw nothing except a few bats and the rat, ^{the latter} was first seen ^{on the} limb of a tree, in the forest which scampered away before I got into action. T + F brought new rat and a white bellied medium sized ^{Rhipidomys} ^{matchin} from Natches Picchu. In the afternoon I shot a white beaded water oryzel at the bridge ^{river margin} and a long tailed rufous cuckoo ^{trojan} in the forest. ^{near camp}

July 7th At noon H. B. and Morkill came down from Natches Picchu ^{Matchin} ^{peaks} saddle and camped. ^{beside us.} On his way back from Pucyura H. B. went ^{new territory passing high the} over ground and over snow ranges and saw in a pass near the small lake Yanacocha many vicceshas ^{four} of which he shot ^{and} with a 22 automatic rifle last saved only the skin. He saw them ^{They were seen} at mid-day sitting quietly on gray granite ^{rocks} which they closely resemble ^{in color} in color. He saw no bear or deer either although he looked especially for such evidence of big game. Caught ^{mammal} in the ^{rat} traps one of the large Rhipidomys seen ^{last} at night on a tree trunk near the road. Rained during the night.

Morkill shot at several cardors near the dead mule ^{body of the} ^{lynx} ^{the mountain side far above} I looked at Intihuatana but I could see none with field spurs in the morning.

July 8th. H. B. and ^{his} party left early for Ollantaytambo. I went down to Intihuatana to shoot condors ^{near the dead mule} but day was rainy and none came near. The owner ^{Indians} of Intihuatana said they ^{the} only come to feed in bright weather. Went down to trail to Abanula River and below to a foot bridge across Umbamba River. On the way back I shot an orange-red cock-of-the-rocks. He was accompanied by a ^{female} which was bright rufous red ^{in coloration} but she escaped as I fired only a light load at her. Stomach ^{contents} of the ^{two} male had ^{two} coffee berries only. In the afternoon I shot near the bridge in the forest a new blue tananger with rufous nape and white bellied also ^{four specimens of} yellow-bearded olive tanagers which were in a flock of a dozen birds. Shot another white beaded oryzel in the sand bar opposite camp. Caught another large ^{mys at base of the} Rhipidomys on the tree ^{where we saw the others} at night. ^{today on their way up the valley from} ^{passed the camp} saw on trail a herd of 10 loaded llamas which came up from

the low country. It is unusual to meet them so low down as ^{amid heavy forest growth of a tropical character} this. They are the first I have seen here, ^{on the lower Urubamba}

July 9th. ^{the} Day ^{was} clear and warm so ^{I climbed up} went out to ^{in a search} mule's body above Intihua-
tana ^{for condors}. None were there and an examination ^{of the}

^{Carcas} showed it to be ~~filled by maggots~~ and still covered by part-
ly dried bones, ^{evidently having} the condors ^{had not} touched it; ~~It was too~~
~~much maggot eaten to suit them.~~ Caught another tree rat at the
base of tree where we saw one at night. Shot a new white

breasted, crested warbler to-day. Cook and Gilbert came in
at 3 p. m. and camped ^{at their previous} ^{and a few hundred yards} on old place near the hut. Saw ^{A tinanon}
on the hillside ^{above Intihuatana} near the dead mule. This bird flew up with a
loud cackle. ^{we} saw the giantic white throated swift and a
large dusky swallow ^{in mixed flocks hovering} on the hillside. ^(for insects 2000 feet above the valley)

July 10th ^{We} Broke camp at 12 noon and journeyed ^{four} leagues up the valley
to a fine camp at Santo Rita ^{twelve} leagues below Toronto.

The valley here is wide and level and sandy ^{and free of} without rocks.
Saw ^{different species of} many birds but they were all ^{species similar to} like those shot at San

Miguel. This place is doubtless ^{marks} there upper limit. Saw at dusk
both species of ^{the large + small} Mollus bats. At Manda ^{or} Pampa and Maquna ^{in the forest} are

^{growth consists of} many large forest trees, the largest I have seen here. Day ^{clear}
clear and warm; ^{at dusk yesterday} At San Miguel ^{the arriero,} Marcos, brought in a ^{small} live Sampropeltic snake which he caught in his
bed. This species resembles ⁱⁿ the color the venomous coral
snake but ^{was a} is harmless. The head was ^{species allied to the genus Sampropeltis} very distinct but small,
^{indistinct from the head} and the snake but 15 inches long.

July 11th ^{AM} We broke camp at 8. 30 and reached Ollantaytambo at 3.30p. m.
Day clear and warm. Some fresh snow ^{was visible} seen on peaks ^{the high ranges} above
Ollantaytambo. ^{flanking the Urubamba valley at altitudes of 13,000 feet}

July 12th ^{AM} Caught ^a Myotis ^{eleven} bat inside the house at 9 p.m. Set traps in
the work-room and caught 11 ^{house mouse} Mus musculus in a short time.
They look lighter than the U.S.A. specimens ^{and} Many of them
were effected with large bots on their ears similiar to those
seen on mice ^{secured} at San Miguel Bridge.

July 13-15 Remained at Ollantaytambo drying and packing specimens

July 16th ^Q We ^{the} left Ollantaytambo with pack ^{out} at ^{fit}. Narcisso, Tomas, Jose and an Indian boy ^{Arilo} for a pass leading to ^{the} Occobambo valley. Started at 10.30 ^{am} and arrived near ^{the} summit where we camped at 4 p.m. Sent ~~mules~~ back with Luis; The valley was ^{or desert-like in character} dry and without forest the whole way to the summit. In some places a considerable ^{growth of bushes occurs} ~~bunch~~ and along the stream is a struggling fringe of alders and Escallonia trees. The vegetation and birds are Andean ^{or rather to be more precise} and Guzmanian, our camp was placed well above the ^t ~~Zimbertline~~ ^{limit of} or bush growth. The ~~whole~~ country ^{in the vicinity of the pass} has ^{is} rolling prairie covered by a heavy growth of bunch grass. The elevation by ^{our aneroid} the ^{barometer} was 12,400 ft. The peaks rise ^{only some} about 2,000 to 3,000 ft higher but ^{without permanent} ~~are only covered by new snow~~ and ^{fields or} are without glaciers. A considerable ^{number small} ~~lot~~ of villages occur in ^{ravines or hollows} all the valleys. Potatoes ^{comprise} ~~are~~ the only vegetable crop but sheep, llamas and alpacacas are the chief ^{products} outputs here. At night it ^{was} ~~is~~ very cold. The side ^{running} of the stream ^{froze mightily} ~~being lined with ice~~, and inside ^{left standing inside the tent froze} the ~~tent~~ water ~~freezes~~ solid.

July 17th. I set out ^{small} ~~trap~~ ^s near camp last night and caught many Euneomys (a small yellow form new to ^{the collection} me), one Oxymetax ^{ru} at dusk. and ^{four} ~~4~~ during the day. They ^{latter species} ~~are~~ evidently nocturnal in habits. A large Rhipidomys rat and a short-eared white-bellied species of ^{Akodon} ~~aperider~~ new to me ^{were also trapped during the night} as soon as it got warm I ~~go~~ went up one of the side valleys ^A ~~viscacha~~ ^(the sun took the chill out of the air I climbed) hunting with an Indian guide and my camp followers. We found two colonies and ^{bagged} ~~shot~~ four ^{viscachas} ~~viscachas~~, all ^{five} ~~told~~ ^{others} escaped wounded into the ^{crevices} ~~rocks~~. Altogether we saw about 30 of them, ^{viscachas} ~~they~~ were exceedingly tame and one could walk in ^{without any attempt at concealment} plain sight within 60 or 70 yards. They spent ^{much} ~~most~~ of their time sitting on large boulders below which were their burrows. They are sociable ^{in habit} and these colonies had about 15 ^{individuals} in each of them. They ^{remained} ~~were~~ out all day. I ~~only saw two~~ feeding on grassy slopes; ^{near the rocks and occasionally} ~~saw a pair~~ playing about chasing one another. One of the colonies was ^{situated} in the rocks at the side of a coral where sheep and llamas

were being housed at night
are kept but this did not disturb the viscacha. After shoot -
I discovered ^{that} still at one by sitting ^{at} some distance the others came out again soon
and could be shot at when they again became frightened.
The ^{stomach contents} was a green substance ^{consisting} of grass and herbs. Two ^{of these} were ^{of the} embryos and each contained an embryo size of walnut. The elevation
here was about 14,000 ft. with ^{Permanent} snow lying about in shady ^{fields the} woods
behind the jumble of boulders in which the viscachas were ^{haunted by} the viscachas.
spots. A large lagoon was near one of the colonies. In the ^{meadows} I saw ^{nearly two} pairs of the large geese, gullata, also saw some
Two species of wild ducks on the lagoon, no condors seen but Carrion, hawks
were common, also lark wrens, ^{slaty} finches, and several other
of birds seen. Day clear and bright but cool like yesterday.
The hills were grass covered without any evidence of bush or tree growth to
No bush or bushes seen only grass covered hills.

July 18th I remained in camp all day skinning rodents and viscachas but
the weather ^{during the morning was} so cold that were fingers were quite numb. Day clear ^{high} and warm
No biting flies or blow flies occur at this altitude
Caught no more of the prebomia nosed Oxypterus.

July 19th W. Went deer hunting up the valley up to the pass head of pass
on the steep mountain sides ^{at the} looking down into the forested depths of the Occobamba Valley
and down along upper edge of Occobamba valley. We saw no
Deer or signs of any ^{country open and grassy up to summit.} which was

On the meadows were many Gullata geese, and red headed ibis
players and other shore birds were seen in small flocks
etc. Saw no rocks a place suitable for viscachas.
Looking down the Occobamba valley we saw ^{the upper margin of the great} forest but soon
mist ^{and} clouds covered ^{the landscape} everything and drove us back to camp
where we ^{carried} at 3 p.m. The bug ^{had been up on a}
visit but returned at 1 p.m. without seeing us. I saw many
herds of long haired alpacacas but neither parent or ^{own} gave
any cries at any time. Apparently they are mute ^{and} only capable of
to ^{em} mitting and hissing sneeze. ^{The} hair ^{of the} neck ^{in the} of adults ^{forms a}
large ^{buff}, giving the neck a much thicker appearance than the ^{dead itself}

July 20th Remained in camp skinning ^{and} birds and rodents. Day partly ^{cloudy}
cloudy. Tomas brought in a new ^{species of} long tailed yellow mouse, ^{of the genus}

July 21st Rained ^{fell} part of the day which made it warmer than usual.
Another new rat was caught to-day, a large eared, long-tailed
gray Rhipidomys. ^{We} have now collected ^{six} species of small ^{mammals}
rodents excluding the viscacha ^{as} from this camp. All appear new
species to the collection. The rodents seem not to be breeding

138

now, only ^{one or} ~~are~~ ^{the mature female specimens of} ~~two~~ of the short-tailed Rhipidomys and the ^{snouted} ~~red-nosed~~ ^{skadon} have ^{contained} ~~had~~ embryos and very few ^{young} ~~miniature~~ have been secured in the traps. ~~Marcos came up this morning to~~
~~with mules to move camp.~~

July 22nd. ^{It} Rained or sleeted most of the night but ^{ceased} ~~stopped~~ about 8 ^{A.M.} ~~P.M.~~ so we packed up ^{our camp equipment} and started for the Occobamba Valley. After a half hours travel it began to snow and all the way ^{from the pass} ~~there~~ we had a driving snow ^{to} ~~stormed~~ our face. At the pass the ground was covered by new snow. ^{on the summit} The aneroid registered 13,800 ft. ²² ~~The~~ pass ^{marked} was ~~marked~~ by a small rock hut and a wall of horses and mules ^{skulls} ~~which had perished at this particular point of cold exposure~~. In two hours travel we passed out ~~of~~ the snow storm into rain and mist which obscured the landscape. The country for about 5 miles below the pass was open and grassy like the Ollantaytambo ^{slope} ~~side~~ with ^{herds of} ~~many~~ alpacacas, llamas ^{and} ~~sheep~~ and some ^{were the only features of the landscape} ~~potatoes fields~~. At about 11,000 ft blue berry bushes were ^{first} ~~seen~~ as well as some ^{with} other small woody plants, one of which was a large fruited black-berry. We made camp at first ^{the} ~~bait~~ ^{inhabited huts} in the valley of the Occobamba where it ^{is} ~~is~~ joined by a large ^{stream} ~~stream~~ from the north at a place called Tocopuque ^{at} ~~an~~ elevation of 9,100 feet. The Occobamba valley ^{below this point is} ~~comes down in~~ very narrow and ^{covered by} ~~solid~~ ^{heavy} ~~vanage~~ forest ^{growth} and the road runs high along one side of the valley is ^{deep ravine} ~~a canyon~~ without a floor wide enough ^{to accomodate} ~~for~~ a good road. Where we are camped it is diversified the south ^{slope} ~~side~~ being ~~very~~ open and grassy and the north ^{covered by} ~~a~~ solid montana forest.

The weather ^{continued} ~~continued~~ today. July 23rd ~~Day~~ misty with showers of rain. Went deer hunting in late afternoon above road but ^{the} ~~saw~~ ^{high up on the mountain side} ~~none~~ only tracks ^{the} ~~where~~ yesterday. ^{at sunset I saw a deer a few yards from the road at same place but it was foggy I could not get a sight of it after} ~~at sunset I saw a deer a few yards from the road at same place but it was foggy I could not get a sight of it after~~ ^{the owner of the land appeared in the morning & gave us a hearty welcome & brought with him a substantial gift of fresh vegetables and eggs. Afterward he visited us daily & showed much interest & friendship for our small party in coloration} ~~dismounting. A large wood pigeon like our band-tailed occurs~~

July 24th Night clear ^{and cold accompanied by} with hoar frost. Caught several ^{species} ~~euneomys~~ (yellow) ^{the} ~~same~~ as in the pass and a dark long-tailed ^{species} ~~one~~ the color ^{of Toronto species} ~~as~~ also one long-tailed Rhipidomys ^{similar to} ~~as~~ the two ^{specimens taken at the pass} ~~from the pass~~.

July 25th No mice or mounds ^{we} ~~caught~~ except one euneomys so went deer hunting above camp on high grass covered range at about ^{an altitude of} ~~about~~

we sighted a fine buck ^{at} 12,000 ft. ^W Saw only one deer and that when we were re-
turning feeding ^{for} below in an old field enclosed by a bush
fence. Shot this one in the ^{belly} stomach at close ranging ^{the bullet} cutting
cutting open ^{the} stomach. ^{As} belly as I could not see the shoulders
or head through the bush. ^{I had only the hinder part of the animal to fire at} It was a fine buck with horns in the
velvet ^{but fully grown} strangely enough. The horns had the ^{identical} shape of those of ^{the}
Americian white-tailed deer with four points on each side. ^{and carried}
^{we were seen only} saw a single condor ^{for above in the sky} and a jack snipe or wood-cock in one of
the ~~apine~~ alpine ponds. Saw very few small birds. Well above
the nontanya timberline I ~~saw~~ a few of the isolated forests
of Senecio ~~or~~ trees, ^G ^x ~~synonyms~~ but no ~~acaena~~ trees seen in the
region. ^{were encountered but no other}
^{species of tree was noted at so high}
^{an altitude}

July 26th Caught one of the large yellow rats in the ~~Nontanya~~ like
Toronto species. ^A ^E ^{were trapped today near camp} ^{bucks} ^{fine} ^{an old}
a dark ~~euneomys~~ ^{Thomomys} also a little yellow ^{Oryzomys} and
the genus Odocoileus. The road we followed up the crest of
on our quest for game yesterday the mountain was a wide stoned flagged affair evidently on ^{an old}
~~even~~ ^{ruca} road. In many places on the ^{mountain side were} ancient stoned-walls
and terraces ^{built} ^{used} perhaps a 1,000 years ago. The whole flat
area about camp ^{at} ^T ^{ocopoqueyn} is terraced by ^{similar} stone walls. This
part of the Occobamba ^{valley} must have at one time supported a heavy
population. The stone work ^{made of} is rough natural boulders like
^{employed} those ~~in use~~ to-day by the inhabitants for house walls and ~~for~~
corals for stock.

^{The new animals} ^{today were} ^{na} ^{ferrale}
July 27th Caught a ~~Caccolistes~~ ^{in the montana} ^{an} ^{adult} also a new
ant-bird similiar to the staty ^{species} ^{one} of Cedrobamba also taken
in a mouse trap. Shot a pair of the crested flycatching -
warblers ^{first} ^{collected} ^{at San Miguel}. Day clear and bright.
Tomas brought in three of a ^{eno} ~~Gerrhientes~~ like ~~alive~~ lizards
which he caught in rat traps set in the fields. ^{for rodents}

July 28th ~~Caught no new mounds to-day~~ ^{four} ^{today} shot a new birds a blue warbler,
a grey flycatcher, a yellow black-crowned tanager and a very
similiar small species ^{having} ^{the} ^{roosting on a} only forehead black. Saw a pair
of torrent ducks one of which was a large boulder 10 yards from
the stream. The men built a Thorn hedge about camp to-day to
keep out the cattle which come ^{day searching} ^{noise} every night and about the
tents for salt. Day clear and warm, ^S ~~with~~ several grass fires

delayed, ^{opposite} on the valley slopes ^{and} which gave the atmosphere a smoky hue. ^{at camp}
The large ^{gray} trees in the ^{forest} Montanya are alders which are ^{at this season} bare
of leaves but covered ^{by} catkins. They evidently are another
species distinct from the smaller green one ^{Alnus castanifolia} growing on Andena
^{at a higher altitude} the creek. I have not seen them elsewhere.

July 29th ^{Two} ~~Caught 2~~ new rodents ^{were caught today} one ^a small edition of the large Nectomys
and the other a large yellow Oryzomys similar to the ones
caught ^{at} above Toronto but having ears ^{the} larger ^{and the} but body size less
Caught another Caecolestes a large ^{male} ^{while waiting for me} ^{Caribou} ~~and a female~~
^{with an immature one} ^{the} ^{the} ^{opposite} in forest on hillside. Deer live low down here ~~in~~ ^{on the}
dry side of valley in bush and forest ~~for~~ cover. Rained P.M.

July 30th ^W ~~Went out~~ shining last night down the lower trail where we saw
^{two} ~~the deer~~ ^{yesterday and then returned and} ~~but saw nothing~~ ^{tried the fields near the camp also}
^{getting} but without results. Tomas caught a ^{female} ^{or bare nosed skunk} Conepatus in a steel
trap and shot the ^{male} which remained nearby. ^{a very unusual circumstance} ~~Another one ran~~
~~away also~~ ^{Two} ^{were caught} caught 2 new rodents near the small creek at camp.

Both are buffy forms with long tails, ~~and~~ small bodies and
scooped molars teeth like Oryzomys and its kindred genera.

Caught ^{six} ^{three} ^{females} ^{were nursing} 3 Caecolestes, 2 of them ^{but none with milk glands}
^{contained} or embryos, ~~although one had what appeared to be peritreal glands~~

~~like milk glands.~~ Shot a pair of ^{the} peculiar torrent ducks in the
river. Both had spurs on the wings, ^{beard of the} those of the ^{male} being the
larger. Marcos ^{arrived at} came to camp at 3 p.m. with the pack mules from
Ollantaytambo. Shot ^a ^{species of} a new gray sharp ~~bellied~~ warbler and caught
another golden ant-bird ~~in a rat trap.~~ ^{were added to the collection today}

July 31st ~~Had~~ ^{were} ^{orig} the traps brought in preparation to moving camp back to
Ollantaytambo but ^{we} caught so many new ^{animals} things that I decided to

~~stick~~ ^{remain} another day and set the traps out again. In the Montanya

I caught a fine ^{male} ^{Pa} ^{or pygmy opossum} adult peromys in a rat trap which broke the
back part of the skull. They are apparently very rare. I

caught also a fine adult ^{new} ^{male} black opossum which is new to the
collection. A large ^{new} species of ant-bird was also caught which

~~which had the golden color of the smaller one~~ ^{but} ~~with a white~~
^{were white} ^{three} throat and belly. ~~caught 2 more~~ ^{Caecolestes} ~~and another small~~

eared Oryzomys ~~also~~ another golden ant-bird and a slaty ant-
^{were caught} ^{today} bird ~~both~~ in rat traps. I have seen neither of these ^{species of} birds in

going the traps round yet I have caught six of them. They are terrific shulkers and ~~are~~ ^{so} common ^{that they} to get caught ~~as~~ often in traps. Day clear and warm with a few clouds in the late ~~at~~ afternoon.

August 1st ^{of the rare pygmy opossums and} Another ~~red letter day; caught another~~ ^{was caught today} ~~Peramys~~ but skull was badly broken ^{again} by the large rat trap. Tomas caught a fine large male coyote and another Conepatus. I shot a new tanager and caught a new blackish ant-bird in a rat trap. ~~Shot another~~ ^A sharp-bellied gray warbler, ~~also~~ ^{and} a blue and chestnut warbler also one of the large golden-bellied blue ~~beaked~~ ^{ant-shrikes were} tanager shot first at Toronto. Rained a little late in the afternoon. This ^{locality of Tocopneque} ~~lacks~~ fly-catchers ~~and~~ humming birds, ~~and~~ owls and hawks ~~and~~ is quite peculiar. ^{and unaccountable} The nomtanya here runs almost to the head of the creek to an altitude of 11,000 ft at least while in the ^{valley} Umbamba it stops at Toronto ^{and Apurimac} at 8,500 on the ~~Aspiunac~~ ^{Andean or} much lower still. This is due ^{apparently} to the greater length of the valleys ^{in their high Andean or} the heights reached by the forest of the Amazon being in diverse proportion to the length of the valley within the ^{high} central Andean ^{grass} ~~day~~ area or plateau region.

August 2nd ^{Today we} I caught no more Peramys or large ^{niv} ~~caracora~~ in the steel traps so ^{we} broke camp at noon and ^{journeyed} moved over ~~to the old pass~~ ^{at the Pass} to the old camp at Pantocancha. Caught two more of the large white bellied ant-birds in rat traps set on runways in the ^m ~~nomtanya~~. On the way over the pass I saw several turkey vultures or a similiar species ~~these~~ ^{which} the Indians call "weetree" in distinction to the condor. ~~Saw~~ ^{more} many carrion hawks ^{together} near the pass, in ^{some} places a dozen or more seen feeding on the ^{grassy} plains. A brown bizzard hawk like ^{of the U.S.A} swamisons was associated with these. Shot a large yellow flicker from a flock of several ^{seen} in the ~~pass~~ pass, also one of the white-tailed flycatchers ^{first} seen at Cedrobamba. Several of these latter were seen in the high country. Tomas shot himself ^{accidentally} in the foot with ^{the} 22 auto while carrying it on his horse. ^{sent him in with one of the men to the surgeon at Ollantaytambo} I dressed the wound with ^{antiseptic} and then

August 3rd ^{The pack} Sent outfit with arrieros ^{to} Ollantaytambo while I went with Jose and Indian boy for Viscachas ^{departed early for} to lagoon where we shot four ^{previously} a week ago. Shot ^{three} at first village ^{four} at lagoon and ^{two} others

At the moment of leaving Tocopneque our Peruvian host bid us a sad adios. His eyes were flowing and in tears he hugged me and bestowed upon me the affectionate farewell which is the custom of the country.

142

on a ridge overlooking the lagoon
higher up. Saw only a few large ones, most of the specimens ^{adults} were ^{seemingly} ~~immature specimens~~ ^{minors}. None of the ^{adults} females collected ^{Before returning} contained embryos. Took photos of ^{the} dead viscachas and ^{the} rock villages where they live. ~~Saw only two~~ pairs of guallata geese and failed to shoot any. Reached Ollantaytambo at ^{8.00 PM, an hour after} 7.30 in darkness and found an English missionary ^{from Cuzco} and an ^{American} ~~am~~ divine from Pennsylvania visitors. Husbrouck, Maynard and Erdes were ^{the} only members at the station. ^{at the} ~~Saw on way down~~ ^{after dark I encountered} at dusk a night-hawk or ^{night-jar} ~~poor will~~ in the road several times.

August 4-6 Remained at the station skinning vicachas and birds and packing up specimens. ^{collecting}

August 7 An Indian brought in a weasel in the flesh which he had killed as it emerged from a hole in a stone house. The head was badly smashed. ^{but I preserved the skin nevertheless} Rained ^{intermittent} to yesterday and to-day, in showers most of the time.

August 8 I ^{dove} went out shooting ^{as Husbrouck} ~~above~~ with M & H at 3 p.m. to Piri ^{situated} at the mouth of Panticalla Valley, ^{a few miles below our station} shot ^{one of} a Tinaxon on a bushy hillside, ^{one of the grouse-like species in coloration} where I saw two others. They were solitary and like quail refused to fly except when shot at. ^{Several} large white-shouldered wood-pigeons ^{were} shot also. ^{and a large bag of turtle doves was obtained.} ^{Early in the morning we} ^{The way led}

August 9 ^{Went out deer shooting} across the valley and up a small creek to the divide looking down on Silque creek where Morkill shot ^{a fortnight} previously ^{an} a ^{male} ~~guerd~~ deer from a herd of ^{eight} ~~nine~~. We followed ^{after our arrival at the divide} an old Inca water ditch or asequia which runs high above the valley along the ^{face} of black shale cliffs. I saw two gemals ^{a male & female} ~~of~~ lying down on a steep hillside ^{far below us}. The ^{female} ran ^{and I shot at the} ^{male} ~~he~~ stood some 300 yards away. ^{Finally} I hit him ^{in the body} and he moved some few yards away and then ^{came to a halt} ~~stood~~ behind a rock only his head ^{being} visible. Through the field glasses I could see his horns distinctly. They were of the single, simple forked ^{two} pointed ^{pattern} typical of gemals and without any brow-tine. We tried to stalk down on him ^{from above} but the place was a sheer cliff and we could not see below us. Finally we ^{heard} ~~heard~~ ^{him jump} and saw ^{a few seconds later} afterwards a deer far below us running along the side-hill. We found no more deer or any tracks ~~or dung~~ in ~~any~~ other parts ^{of the mountainside} ^{are the ruins of} ^{ancient} place. The ridge ^{has} an old fort and field on it with many terraces or Andenes below it. The altitude is about 12,500 ft and the bird life is like that of the Occabamba Pass region and quite distinct from that of Ollantaytambo lying in the valley immediately below.

August 11-13 The packing ^{and} cataloging of specimens and preparations for the long journey to the rubber station on the Cosima River occupied most of my time during the 11th to 13th of August. Shot a new small dove with gray breast and black tail; also one of the alpine flycatchers gray with a red crown patch like the species seen at those of the Occabamba Pass. Saw several condors but none came close. At base of trail near Urubamba river ~~saw~~ a flock of red fronted parrots which ^{were encountered at} is the highest point in the valley I have ^{yet} seen this species.

August 12 I ^{mode} went down to Piri for Tin ^{namou} in the morning. Shot one and ^{bagged only} but saw others in the cattle corral. This one ran into bush at the hillside of corral and later saw it again in the cactus near the road but I could not get a clear shot at it. The one I bagged got I shot after getting within a few yards of it in bush country. It was so close that I waited till it ran some distance so it would not be mutilated. Shot four of the large wood pigeons, called torcats, ^{by the Peruvians.} They were all males, one with enlarged breeding testicles. Turtle doves were in large flocks, shot 19 ^{had} in the corn stubble fields. The tenonens had ^{found} ^{and} ⁱⁿ ^{had} pacay beans in theirs. ^{tinamou collected}

August 14th We left Ollantaytambo ^{early} for the Yuvisa Rubber finca of Alvin ^{a Danish explorer} ^{carrying our outfit} ^{carrying} Berg. Took 7 pack mules and 8 extra with empty boxes for sherds ^{from} at Pucyura. Ford accompanied me ^{as far as} San Miguel Bridge. First day we reached Maquina late ^{just} at dusk and camped at the hut. It rained during the night. On the way down it was clear and warm. Just below Torontoy in the canyon I noticed several yew (Podocarpus) trees growing close to the road-side which are the first I have seen ^{in Peru}. Farther down I saw several of the large yellow alder ^{trees} seen at Tocoqueya in the Occabamba Valley. ^{but nowhere else}

August 15 Weather rain during the morning but at 10 a.m. it cleared and we ^{continued our journey to} left for Santa Rosa ^{just} above San Miguel a half league in ponds. I saw quite a few small fish. At mouth of these ponds ^{had been placed} were fish traps made of cane twigs with a basket in the bottom for trapping the fish. Above the traps were four poles set so as to cross above ^{from a} ^{and act as} like handles. At San Miguel I left Marcos ^{the muleteers} and Lewis with extra mules to bring down the boxes left at ^{match} ^{Notches} Picchu ruins. On the way down the canyon I saw a flock of red-fronted green parrots feeding in blossoms of Erythrina trees. ^{no} ^{no} ^{were met with} ^{and undisturbed} saw no new birds although the road was deserted it

X
Colpau
149
being Sunday. After leaving the canyon at Colpau Bridge the character of the country changes radically. The granite rocks cease here ^{and with them} the Montanya forest. Below Colpau all the way down the valley the mountain sides are bare of trees and ^{the exception of} are grass covered with a few patches of trees near the river only. This ^{lack of trees} may be due to constant burning but it is so complete that the change in rock formation no doubt accounts for it. The canyon ^{of the Urubamba} throughout is granite ^{is for covered except on unbroken cliffs} only. Shales and conglomerates with grass covered. ^{take the place of the granite below Colpau} Saw many fish traps below Colpau where the river increases 100% in volume ^{below San Miguel} due to entrance of ^{two} large streams, ^{the} Rio Tobamba and the Rio Salcantay. Below Colpau the trees are quite different in genera from those growing in the canyon. Most of them ^{many of them Acacias} are covered by long streamers of Spanish moss Bromeliads and ^{giving to them a} look gray in appearance, their own polliage having little color effect. Shot a large spotted lizard on the road side. Near ^{new species of} the village of Guilliyay saw a medium sized blue Heron in the river. The small birds seen along the road were the same species ^{as had already been} I got at San Miguel. We reached Santa Rosa at 5.30 p.m. and camped near the ranch house.

August 16th Night warm and clear. ^{We} left Santa Rosa at 8 a.m., reached ^{the} mouth of the Vilcabamba River at 10 and then ^{followed this stream} travelled up to the Paltaybamba where we arrived at 2.30 p.m. The chief tree along the road and riverside is a tall spidery ^{Acacia of the genus} Piptadenia. Below Santa Rosa the large festoons of Spanish moss were not seen ^{on trees} but a short moss-like ^{growth} species which covered the limbs of trees, took its place. At Colpau we saw the first black vultures ^{which} and they continued to be seen as far as Paltaybamba. A conspicuous bird was a green billed yellow-tailed Griolet ^{or} cassique, colonies of ^{the} long pendant nests of ^{this bird} which were seen suspended from trees near the road. The aneroid gave 5,100 feet ^{altitude} for Paltaybamba. The "finca" consisted of sugar cane and a factory for making sugar and aguardiente. Sr. Oliart, the Administrador, ^{told us} says ^{were} monkeys are only found a long distance from the finca in the higher forest where the two species occur, a small gray one and a large species black. He showed me a large black currow domesticated which lives in the patio and ^{This bird came originally} ^{from the} Yuvini Rubber finca. ^{and is known locally as the "paukil"}

This locality marks the upper limit of the range of monkeys in the Urubamba watershed

145
August 17th ^{we} Remained all day at Paltabamba. ^A at noon Marcos and Lewis ^{arrived} came in with the boxes from Nothofagus Picchu. I tried to shoot bats at sunset as they flew from the tiled roof of the factory but they left at ^{for my marksmanship} a terrific pace. Most of them ^{informed us} flew like Molossus but appeared ^{grayer} little gray in color. Oliart ^{informed us} said that near Pucyura there is an old ^m mineshaft haunted by bats. He gave me a letter to the governor so I could ^a get a guide to the cave. ^{which enabled me to} to-morrow. He said below the finca there was another mine or cave frequented by bats. He also ^{exhibited to} showed me a large wood pecker ^{mounted specimen of} size and color of our ^{pileolated woodpecker} log-cock which was shot on the finca.

August 18th Jose caught in the cane fields 11 ^{rodents} mice of 3 species. ^{most} of them were ^{one} Euneomys in color and a large ^{one} Orzyomys in color and smaller yellow Orzyomys. Broke camp at 8.15 ^{A.M.} and moved up to Lucma. On our way we passed through many ^{of} forest patches but saw no minkeys or large birds. The green jay and the olive cassique were common birds. ^{on the way} When near Lucma ^{were met} saw many small birds of the warbler type some of which were new to me. Shot a new sized medium golden-yellow woodpecker and a rufous wood ^{however} beaver. It rained hard for one hour at 2 p. m. just before we reached Lucma. ^{and drenched us to the skin,} At Lucma we found the inhabitants all away ^{absent} at Pucyru attending a festival. The village is situated in a ^{deep} sloping ^{at} wide valley with montanas on both sides but no really heavy ^{continuous} forests.

August 19th ^{We} Remained at Lucma waiting for ^a guide from Yuvini but none ^{was} came on account of the festa at Pucyura. Spent the afternoon visiting the bat ^{haunts} cave in the old mine tunnel which Oliart ^{had} told me about. The bats were ^{found} near the mouth some 15 feet inside ^{from the} entrance hanging ⁱⁿ to the clusters to the roof. Beneath there was ^{on the floor of the tunnel} a foot in depth a bloody mine composed of bat dung. ^{a foot in depth} But it was ^a pasty ^a mass in which ^a and our feet sunk into it to the bottom. I shot half dozen and ^{five} caught ^{others} others, the rest retired ^{where} farther in the tunnel but we could not follow as the mine was too deep. The bats were all of one sort, ^{They} Desmodonts the blood sucking vampire and were very large and much larger than the Mexican race. ^{Specimens of} Both sexes were collected, the ^{females being the} were much larger. It did not rain in the afternoon but it clouded it up as if it would

176

Pucyru is some 9,500 ft in altitude ^{and marks} which is close to the upper limit of the blood-sucking bats. I saw black vultures as high as Pucyru where they were common. ~~At the~~ Altho Lucma and Pucyru are ^{approximately} at the same altitude as Ollantaytambo they are ^{also} ~~formally~~ much lower and practically ~~nontambs~~ ^{comprised within the forest} zone. They have ^{abundant} much rainfall, and ~~are with forest clinging to both sides of the valley.~~

August 20th ~~Joe~~ caught 3 mice last night at Lucma, ^{one} ~~one~~ ^E ~~euneomys~~ ^{one} and 2 long-tailed Oryzomys of small size. Left Lucma at 8.30. ^{Amr.} ~~for San Miguel.~~ The road ^W wound up to the ^{mountain} side of the first stream from the west entering the Vilcabamba ^{valley} below Lucma.

The hill was heavily forested but the trees were small with the foliage ^{and} general appearance of the ^{evergreen} ~~line~~ oaks. Many tall tree ferns were seen ⁱⁿ at the ^{forest} front ^{growing with the} also some bamboo. At the crest of the ridge at about 12,000 feet ~~perhaps~~ the forest ^{suddenly} gave way to the heavy bunch grass of the high country. On the summit the country ^{consisted of} was rolling grassy downs without cliffs or forest. ^{after passing} Just over the summit in some wet meadows we saw a pair of Guallate geese, ^{and} several flocks of large ^{hawks} ~~plavers~~ ^{also} a few carrion ^{hawks} ~~banks~~ and one brown ^{by} ~~razzard~~ ^{of a spot three}. We made camp ^{hours} down from the summit in a scattered ^{forest} ~~nontambs~~ of small trees and bamboos ^{at the edge of} on a clear creek where a road hut had been erected.

The camp ^{our guide} arrived ^{us} was called ^{our} ~~Altitude of of camp~~ ^{abundantly} ~~Corrangwaya~~ ^{the altitude of which was} just 10,000 ft. I did not ^{estimate} ~~have~~ the aneroid ~~out~~ at the summit but should ~~say~~ the crest ^{at} ~~was~~ not much over 12,000 ft as the drop down to the camp at 10,000 ^{feet} is not sharp. The ^{not far away} ~~Ida~~ pass, ^{is} marked 14,800 ft, could be seen ^{but} looked very little higher than the San Miguel pass. There are no snow ^{ca} ~~packs~~ nearby and it is doubtless much under 14,000 ft in altitude. The ~~guide said the name of our camp is~~ ^{made} ~~Corrangwaya.~~ After we had ^{made} ~~camped~~ ^{train} Bergs Rubber pack outfit ^{until dark} ~~came~~ from Pucyru and camped with us. From 4 p. m. to 6 we were bitten much by a minute fly ^{the} size of a pin point and gray in ~~color~~ ^{blood-thirsty} color. They were ^{leannous of microscopic size} ~~desinous~~.

^{During the night we} August 21st ^{collected} ~~caught~~ four dark brown Oryzomys like the species ~~found~~ ^{at Occambamba valley but richer in color.} Broke camp early ^{and} continued our journey down the San Miguel River to Yurini

The ^d ^{was} Day ^{clear and warm.} The road ^{after following the stream for a few} ~~crossed over~~ ^{ascended a} after ^{miles to} another valley and then to ^a forested ridge which we followed for a league, then it dropped steeply down ^{through} then more forest for another league, to the San Miguel River. Here we ^{again} ~~struck~~ ^{encountered a} heavy forest of large trees and a fine wide ^{road} ~~wooded~~ ^{which descended} gradually. ^{to the river} ~~Saw only a few birds and no mounds.~~ ^{we} Followed the river for ^{three} ^{and arrived at} ^{with a} leagues to a hut and clearing called San Fernando where we camped at 2.30. The owner ^{chief possessions were} ~~had~~ a tame Pavahil curassow, and a black wood-pecker, and a large green parrot, ^{and} also a family of four children. The vegetation along the ^{day's route} ~~way~~ was for the first league bamboo with a ^{scattering growth of} ~~few~~ small trees. There on the ridge ^{we entered} ~~grew~~ many large ^{leaved} yew trees. ^{also} a tall slim stemmed palm and a multitude of ^{added variety to the forest} tree ferns. Altitude of ridge about 9,000 ft. Along the San Miguel ^{River} ^{the} ^{grew} a great variety of large trees ^{among which} I saw many Cedros and killer figs. Prickly stemmed palms were also common and a large stemmed bamboo, ^{two} also ^{or trumpet trees} 2 species of Cecropias and many tree ferns. The altitude of San Fernando by our aneroid was 4,400 ft. ^{assured us that} The owner ~~said~~ brocket deer, agouties and ocelots lived in the forests, ^{but a few} ^{were rare} ^{quite absent} monkeys and no tapers. Peccaries were found ^{in small herds} ~~here~~ also and the lesser anteater occurred. Pavahil and curassows, parrots and ^{tracans, tinamous} other birds were common. The savages of the ^{this} ^{great} ^{but} Nachaganga tribe wander ^{so} high in the forest and are timid and seldom seen.

The family of San Fernando ~~He~~ raised a little sugar cane, coffee, peanuts, pineapples and vegetables. Two species of squirrels occur, ^{here a} ^{species} one very small and a larger one. Armadillos are found lower down.

continued our journey from August 22 We ~~left~~ ^{A M} San Fernando at 8 p.m. and arrived at Yuvini at 1 p.m. The weather ^{was} ^{hot} ^{midday} ~~Day~~ clear and warm at noon. I saw only a large squirrel on the road and a few birds chiefly cassiques and jays. ^{I encountered} ~~Saw~~ my first Nachaganga savage, a tall ^{naked} ~~unshaved~~ man with drawn bow ~~standing~~ on the river banks watching for fish. He was stationed across the river and below ^{us} ^{was so intent on his fishing that he} ~~me~~ and did not see us as we passed. He looked like ^{one of} the savages of the Amazon in the school geographies. Later at Yuvini we saw other ^{s somewhat} ~~more~~ civilized and clothed. Berg was away in the forest with his rubber gatherers when we arrived and did not return for a day or two. His station ^{at Yuvini} ~~is~~ situated in a wide

147

in the center of a great clearing with valley with clear forest but bushy land bordering it. Bananas and oranges in numbers grew near and the huts, Indian have a cane field and mill for making aguardiente close by. ^{sketch of the station was situated in} ^{in another clearing} ^{hill} ^{ed} ^{Can be seen across the river rising valley floor} ^{the station and above the ridge across} ^{the river can be seen where there is} ^{good pasturage. The} ^{aneroid registers} ^{just 3,000 ft. Yuvini. The Pampacous river} ^{joins the San Miguel only about a league above here, their} ^{union making a} ^{Gosireni river. Conservidor is said to be} ^{about 12 leagues away but there is no trail to the place from} ^{Yuvini up the Pampacous.}

August 23
Marcos + Lewis ^{on the return journey to} left early with the mules for Ollantaytambo. I waited for a guide in the morning but as none appeared I went out in the afternoon ^{to the hunting country} ^{to shooting} ^{situated} ^{walk} to the cane field for half an hour up the road. Found no agoutis or squirrels but an Indian took me to a ^{agouti} ^{runway at the edge of the} ^{yuca field. When we arrived we} ^{erected} ^{on one side} found a Machiganga palm ^{there with a hole} ^{facing the run-} ^{way and a bit of corn as bait in front of the hole some 2 ft} ^{away. A Machiganga Indian with a bow and arrow was} ^{waiting} ^{for} the game but moved away timidly when we came. Two other Machiganga ^{seen} ^{had} in the forest with their faces painted bright red ^{and their} ^{bodies clothed in} ^{and long robes were seen} but they disappeared quickly also. Berg ^{told me that the use of a} ^{says this hut or blind method is their usual way of get-} ^{ting} ^{any sort of game. I saw several yellow-tailed cassiques} ^{and shot one. A large tree containing their long} ^{pendant} ^{nests grew} in the cane-field. Shot two of the large red headed log-cocks and ^{heard} ^{several other} ^{skimming. A large species of Toucan} ^{was} ^{seen in flocks of five of them two shot. Two small slaty} ^{hawks} ^{or kites were also} ^{killed shot in the field. Parrots} ^{flew} overhead ^{and a} ^{captured} ^{one talked} ^{Yuchua at the house where a} ^{single} ^{pass of logs} ^{were erected for pressing the cane. Berg} ^{came in from the forest in the afternoon} ^{and I went over} ^{and} ^{talked to him in the evening. He is a Norwegian who talks} ^{perfect English having lived two years in England London.}

and in plique slender + wiry

147

But without any acquisition of the U.S.A. He is about 50 years ^{in age} lively and brown haired. He reported Tapir as ^{in a period of fifteen years residence} the only one seen by him. A few days ago he shot a lesser antean which ^{he informed me} are also rare. The monkeys ^{in distribution} are local and not wide spread. Two

months ago the black spider monkeys were living near the river but now they ^{have moved} are higher up the slopes. He ^{told me that} says the river here is the Cosireni and ^{enters the Urubamba} flows in above the bog bend. The next river below ^{the Cosireni} these to which there is a good road is the

Combarciato and this enters the Urubamba at ^{its great} the bend a few miles below the Cosireni. From the ^{junction of the} grassy pacanal ridge the whole country is visible. On the Combarciato there ^{for many miles around} is more game and the country is lower but malaria is prevalent.

He ^{he affirms} says that slave raiding still goes on for rubber labors for the lower amazon. The Indian lower down ^{in the neighborhood} of another tribe

come up into this country in the dry seasons ^{during} in moonlight nights capture ^{isolated} families of Machigangas and take them ^{down the} below

^{river} as slaves. These Indians ^{carry} have combines and shooting who resist them. Last year ^{Berg} he lost ^{several} 15 families ^{by these slave raiders} presumably in the same way.

Berg has found a great many old Spanish mine roads and some ^{tunnels} ^{in the forest near Jurini} ^{burds} of old gold mines. All the roads ^{led to Conservidore} led to Conservidore ^{a Yoc}

^{with the old boys when} and the whole country was known only to ^{the} spanish. He has ^{heard} many stories of rich gold mines known only to the Machigangas.

August 24 I ^{the} went to ^{following} Pachaval with a guide ^{over} the mule road which crosses

the Cosireni on a suspended ^{in the forest} bridge. Saw no ^{we} count monkeys or

other mammals. The pachaval is a good pasture the grass grow-

^{thickly} ing on dry hard clay ^{soil} and is scattered condition. Saw a few

^{I was surprised to see a} condors ^{at this low altitude} flying about the mules and cattle ^{pastured} which are there.

^{one} Shot 4 wood pigeons of a ^{co} brocolio brown color. They utter a

very soft pleasant whistle, ^{like note.} shot a goutmaker in the trail,

^{A goatsucker and} also an olive-backed trogon of small size. ^{were secured on the road} Small birds were

^{however} quite absent. One peculiarity ^{here} is the absolute lack of hummers

^{which are so abundant in the highlands} anywhere. Flycatchers are also quite rare. Most of the birds

are large ^{but} and a few in number. The rocks ^{seen} in place along the

^{side borderings} road up the hill were ^{in appearance} soft slaty shales. On the floor of the

valley are large granite boulders ^{bordering} along the road but they ^{have} all

come from the headwaters of the river, ^{transported by the stream.}

August 25 ^{camp} I ^{remained} all day in skinning birds. Jose caught one Nectomys yesterday and another to-day out of ^{some} 60 traps set. ~~at~~ Rodents are very rare here ^{owing no doubt} this may be due to the great prevalence of ^{which is unfavorable for burrowing} ~~carcasses~~ ^{carcasses} ants and the hard clay floor of the forest. ^{Swing in} the ^{harbor} palm Santo trees in the forest ^{an} amber colored ant which ^{stings} bites like fire and is exceedingly painful. ^{The ant} It lives in the bark of this tree ~~and only~~ ^{which} only but the ~~santes~~ ^{santes} grow ^S everywhere near streams. ^{in the low country}

August 26th ~~Caught nothing in the 4 steel traps set near the lower road.~~ I went with the guide to the "Cuple de Monos" ^{where we} found a troupe of ^{black monkeys} ~~and~~ and shot at them with the 22 ^{rifle} but secured nothing. They were ^{and made their escape at great speed} large black spider monkeys ~~appeared to be fairly tame but we~~ ^{and we failed to} could not find them again. Saw several bevvies of a small ^{crested} part-ridge golden in the depths of the forest, also two ^{ck} cock of the roses and many ^{v n} torcas. Berg says that a bush ^{dog} occurs here ^{which} They occasionally come in pairs near the house and kill ^S chickens. The ~~stinging~~ amber ant lives only on the Pala Santo tree a small ~~straight~~ straight tree with elliptical leaves 1 ft. long. This tree grows chiefly along rivers and in wet places in the forest and seems near to be without the ants.

August 27th I ~~went~~ ^{ed} across the river to the monkey pulpe again to-day but saw no monkeys or other mammals there. On the return ^{journey} at Yuvini creek we saw ^{three} small black tamarin monkeys or other mammals ^{at Yuvini creek} which ^{ran} running along the bank ^{of the stream} into the bush ^{and} but they were so ^{rapid in their} quick ^{movements} that none could be shot. They appeared ^{quite blackish and} solid and about 1 ft. ^{size} large in body. Shot a ^{small} crested golden quail ^{partridge} in the forest from a ^{crow} band of six also a crimson-red quail-dove. When I returned to camp I found that the Machigangas had brought in a red and ^{baudied} ~~baudied~~ Calubrine ^{which was upon dissection I found to contain} black ~~Ophibabera~~ snake ^{and another species inside nearly as long as the other which} ^{itself.} ^{The swallowed snake} was in fresh condition so I preserved it. I have only seen one species of lizard here near the ^{huts} houses. There are ^{several others living} ~~none~~ along the road ^{and in} ~~or the nentana.~~ ^{forest} The ^{storm} ~~It~~ rained last night ^{was} accompanied by thunder and lightning. It rains somewhere in the hills ^{within sight of camp} nearly every afternoon but seldom down here in the valley. The hill country here is without ^{a definite} dry season ^{the} rain falling the year round.

August 28th

151

I went out shining ^{with the full light} last night as the moon allowed ^{me two} hours of darkness before rising. A large goatsnake was seen along the road in numbers and I shot 2 ^{species of} males and 2 ^{species of} females. The latter were quite distinct ^{from the males} in color and contained eggs ready to desposit. ~~Shin~~ Secured a fine red deer, ^{in the} Mazana size of a gray Andean deer but red in color with blackish head and legs ^{similar to} exactly like the bush buck of Africa in general body color. This one contained a naked embryo the size of a squirrel. Stomach contents were several olive-like fruits of palm, pieces of ^{the yellow} orange fruit of a Solanum ^{anum} and a large soft fruit ^{the} size of a prickly pear, ~~also~~ and many leaves ^{of bushes} but no grass whatever. Teeth well worn ^{the animal} ~~Exhausted~~ ^{were} pit small. Several families of Machigangas came to see the camp this morning. The women wore long robes and ~~the men~~ ^{were} much ornamented by necklaces of seed-pods of ^{various} several plants, ~~also~~ ^{the} also bills and beads of ^{two} species of toucans and ~~some~~ parrots together with ^{skulls + teeth} stones of agatis and monkeys. The men were less ornamented with only a few beads, ~~in the case of~~ ^B boys with a crown ^{or} of wreath of ^{curassow} parashil feathers. They had ^T the cheeks and nose ^{were} streaked with red pigment ^{in narrow lines in a definite pattern} from a cultivated plant however. These savages were gentle and well mannered. They asked for the meat of birds which I gave them and they ~~were also~~ ^{showed} much interested in ^{our small surgical} scissors. One of them had a shot-gun and all had ^{carried} a watchlettes ^{bush} or large knives but ^{only a} few bows and arrows. In the late afternoon I went over to the station and ~~seen~~ ^{examined} the skins Berg has gathered. ~~and he~~ ^{He} had one golden prehensil-tailed anteater, one ocelot, one collard pecarry, one white lipped pecarry and 4 deer skins all of which were ^{rufous} red like the one I shot, ^{obviously Mazanas} none being bay colored. A good many Machigangas arrows were seen in one of the houses. They made with ^{were} a reed ^{long} shaft ^{pointed by} with a cedar head and feathers at base with ^{bound by} a spiral twist. ^{The usual} Some of the feathers ^{for this purpose} were macaques. The bows are made of very ^{hard} wood which is deep black like ebony, ^{in color} bicolor, ~~with~~ It is obtained from the stem of a slender prickly palm. A tame ^C pecarry ^{collard} was seen to-day feeding about the ^{place} ~~place~~.

August

thoroly domesticated but without any friendship for domestic swine.

August 29th Saw ~~nothing~~ last night on the road down to the bridge which I shined. Went out in the morning with the guide for pecaryies near the cane field but saw nothing or met with ^{no game or fresh} tracks at the culpes ^{we visited} in the forest. In this district the natives know of a few poisonous snakes and of no really large ones like the boas. ^{and anacondas} This is remarkable considering that ^{I was surprised at this as} poisonous snakes occur higher up in the valleys ^{and} large ones in the Amazon valley lower down. Lizards are also few. The ^{in numbers} absence of snakes generally may be accounted for ^{partially} by the absence of rodents which ~~are~~ form their chief source of food. Along the road were seen two platforms or large nests made by the Machigangas in a tree bearing olive like fruit which is eaten by many birds, and ~~also~~ ^{a favorite food of} ~~also~~ ^{withdrawn bows} From these platforms they lay in wait for the birds. Berg ^{informed me} says that the bats ^{sometimes feed on} often come and eat bananas placed on platforms to dry near the houses. By using strychnine ^{on the fruit} he has killed many ^{bats} but only two species one with white stripes on the face (Artibeus) and the other uniform gray brown in color ^{have been thus secured} Glosophaga. The rubber ~~he~~ ^{ed} collects in the forest ^{near the station} is the kind called jevi, a species of Para rubber. The common caucho does not occur here. The rubber trees occur lower down ^{on the Combarciata} the river a few miles ^{away} and are ^{to} tapped annually for rubber ^{by the Machiganga gatherers}.

August 30 Shined ^{up} the road for 3 hours last night and shot a ^{at the animal} ~~bassari-~~ even from a tall tree in the forest. I was first attracted by its peculiar cry which was uttered when it saw the light. Later we saw its eyes which shined very brilliantly like those of a ^{leopard} ~~leopard~~. ^{Today I secured} ~~This one was an old female~~ ^{leopard} in shape and color ^{it} resembled closely ^a a kinkajou. The stomach contained fruits and green

Today I secured an old female Bassaricyon which

vegetable pulp. In the morning I went with the guide and Cerillo ^{followed the high grassy ridge} up the road to the pachinal and ~~over~~ ^{as far as} the great bend of the Urubamba. Here we looked down upon the ^{junction} entrance of the Combarciata ^{a with the Urubamba} at the bend but the Cosiren ^{River lay} entrance behind a ridge ^{beyond our sight} and farther up. Well up the ^{great} river a bare grassy or burnt reddish colored ^{marshy} hillside was pointed out as ^{bordering} Rosalina. Along the Urubamba river we could see many sand bars and ^{lined} the level beaches with bush and forest further back. On the road we met with a troupe of Cebus ^{kept} monkeys one of which I shot. They ^{calling} uttering a peculiar

squeak^{ring sound} or whistle. The guide, Mariano, decoyed them by uttering a similiar whistle and shaking a tree ^{suddenly} ~~sharply~~ imitating thus the noise made by a monkey^{es} jumping into a branch. They came to this sound twice and both times I fired at the monkey^{one of}. They could ~~not~~ be seen peering at us through the trees. ~~They~~ ^{at least} about a dozen monkeys were in the troupe. The tail tip ~~was~~ ^{is} of the Cebus ^{is carried} without a pad but curled up and ~~was~~ ^{is} no doubt prehansile but not greatly so. ^{we} Flushed from trees could ~~see~~ ^{the} many ^{green} parrots but ~~could not~~ ^{we} see none ^{while they were} sitting altho the trees were small.

It is remarkable how impossible a green parrot is to see in ^{amid the green foliage of a} a ~~caly~~ tree as it sits perfectly still. The ~~remarkable eye~~ ^{we returned to camp at night and} sight was not able to see them either. On the way back I shined the road ^{side} but only ^{secured} a kinkajou an old ~~female~~ ^{found}. It was high up in the trees in the forest. ~~Saw on the way~~ ^{down to the ridge} a large rat or small rodent on the road but it ran into the bushes when we ~~approached~~ ^{approached}. The height of the farther pacanal which is directly above the ~~great~~ ^{approximately} bend of the Urubamba is about 5,000 ft the trail cross-^{ing} ~~being~~ ^{attaining} 4,800 ft where it passes over the summit. ~~The~~ ^{just below the highest point}

On the pachanal the climate is cool and there is a heavy growth of grass shoulder high in places. Much of the open country is covered by ~~brooks~~ ^{tall broken} ferns, ^{if a} Ptersquilina 6-7 feet high ^{making} and the hills look like our northern slopes ~~near pine forests~~ ^{fern clad slopes rather}.

August 31st ~~It~~ ^{Rained} nearly all day beginnning at 7 a.m. with a thunder shower. The kinkajou ^{I found on examination} had large skin glands at the angle of the mouth and a naked patch ^{overlying glands we} on the throat. Heard the large black spider monkeys calling at 2 p.m. across the river. We ~~remain-~~ ^{Alvin} ed in camp all day. Berg returned yesterday from the ~~mountains~~ ^{an unsuccessful search in the forest for the fabled gold mines} with sciatica rheumatism. ^{of the early Spanish conquistadores.}

September
August 1st ~~we~~ ^{today} went out again hunting black spider monkeys across the river with another ^{guide} as Mariano had a ~~bad~~ ^{swollen painful} ear. We ~~went~~ ^{journeyed} further up the river than before, as far as the edge of a large ravine where we heard the monkeys yesterday but we ~~saw or heard nothing of~~ ^{could find no trace} them. While we were ^{eating our lunch} waiting at noon well up the ^{mountain} side hill we heard ~~the~~ chirping and soon saw a troupe of squirrel monkeys. They were ^{travelling thru} in small trees near the ground and when we squeaked

at them they came in sight in twos and threes. I shot ^{four at a} ~~4~~ with ^{distance of} ~~some 40 yds away~~ and ~~two others were seen later.~~ ^{or before they discovered us and made their escape.}

^{monkeys} These were black with white faces and brown rump. They have a ^{on the shoulders} slight mane and appear to be close ^{to the lion monkey of the lower} to ~~Midas bicolor~~ in color ^{Amazon} ~~tion.~~ We saw no other mammals and very few birds. Took up the ^{four} ~~4~~ steel traps ^{which had been near} on the road and found a large ^M ~~marmosa~~ ^{opossum} in one ^{which was} ~~badly ant eaten and dead killed by ants.~~ Day cloudy but without

no rain. ~~Saw much of the~~ ^A yellow tuberculate fruit ^{grows the} in forest ^a which is favorite ^{food} of the monkeys. ^{and many birds} ~~name Gornebe.~~ ^{It has an orange-like} ~~round surrounding a white pulp~~ ^{of fine tart flavor} in which a few seeds ^{are} ~~are~~ ^{and added Madagascan name: Noprasie.}

Sept 2nd. We Remained in camp skinning monkeys. Rained quietly part of the ^{along forest} day. At night I went shining ^{near the} up the road and shot another ^{one} ~~Bassaricyon~~ at same spot where I shot the first. It was a ^{individual} ~~but~~ smaller and less minature than the other. It first attrac- ^{the} ted our notice by peculiar rattling cry. The stomach contained ^{the} yellow vegetable pulp of some forest fruit.

Sept 3rd The guide's ear was still ^{bothering him} ~~bad~~ so could not start for the Rio ^{with us} Comerciato, ^{B kindly} but Berg sent for another guide who arrived in the ^{In the meantime I climbed} afternoon. ~~We~~ went up to the pacanal but saw no monkeys or ^{graced the occasion with} other mammals. Took supper with Berg who ^{cigarettes made of} furnished both Span- ish Sherry and ~~some~~ home grown tobacco. Tobacco grows well at ^{Yuni} ~~Yuni~~ and is of good quality but as it is a government monopoly ^{in Peru} it does not pay to grow it ^{for the low price paid by the government}

Sept. 4th I started at 8.45 a.m. for the Comerciato with with one pack ^{my} mule ^{and} saddle mule, Jose, ~~and~~ Cerillo and the guide. On the ridge overlooking the Urubamba we met another troupp of the brown ~~Gebus~~ monkeys and I shot an old ^{male}. His stomach contained caterpillars and purple fruit pulp. We camped at the Combaciato ^{at this point} which has a fine pebble beach ^{nearby}. The altitude here was ^{only} 1,800 ft. ^{at} Rained ^{it rained} during night and afternoon. ^{Opposite our camp} Here we saw a ^{otter} pair of ~~allers~~ fishing in the river ^{they} without showing ^{ed little} any fear of us. The river ^{here} is broad some 50 yds and ^{or} ~~quiet~~ without ^{pond-like} ~~any~~ large ~~or rough~~ rapids. ^{at} All night we ^{proceeded thru the forest} went out with the light but only saw a few toads and a goat-sucker. Shot a black currow ^a having a white crest. ^{+ white spotted wings} Two of the large slaty tinamons ^{were seen} ~~on the trail~~ ^{and} They are the size of a guinea hen similiar in color. I saw some of the large bats of the genus ^{flying above the river} ~~Phyllatomus~~ near the camp at

dusk.

Sept. 5th

We travelled up the river to the upper station rubber of Arroyo, starting at 7.45 and arriving at 1 p.m. day rainy. Two hours ^{journey} up the river we reached a Machiganga village ^{having} with about 15 inhabitants ^{among which I recognized several} some of them the same who visited us at Yuvini. On the road I ^{we met} saw several of the white-crested curassows and a pair of ^{large} rufous tree squirrel but did not see any monkeys or tinamons, ^{or any} Tracks of tapirs, pigs or deer ^{encounter} in the road ^{were quite wanting} altho it ^{muddy} which was soft and slazy in places. The river continued broad ^{in character} and without ^{dangerous} rapids all the way. At the upper station of Arroyo I was surprised to find ^{the altitude} it only 2,100 ft or only 3,000 ft ^{as} above the first camp which is 15 miles lower down the river.

Sept 6th

Rained ^{the guide us to} in the morning after we had started for a culpe to hunt monkeys. ^{be we were unsuccessful} Saw another squirrel red but no monkeys. Last night I ^{provided} skinned about the camp ^{with the head light} but saw nothing nor did we flush ^{of game animals} at any animals. We started down the river at 10.am. On the way we met ^{a troop of} about 10 or 15 squirrel monkeys and shot ^{golden} ^{bagged} four of ^{them; one female + three males} ^{in this species} ^{proceeding in relative size that of man} a ^{possibly} and 3 of ^{possibly} All contained frogs. The skull is extremely long and overhangs the condyles greatly. The eyes of these monkeys were filled with moisture or tears at death. ^{The stomach contents of all the specimens were figs.} ^{doubts hundred too all tears in their species.} These monkeys did not seem to have any alarm notes but followed one another close and silently through the trees. I shot a parrot, a fine adult female which was associated with another the male no doubt. Made camp in the deserted machigangas village ^{one} near the inhabitant village. ^{here we could occupy the vacant} ^{huts + camp comfortably free from} ^{Samirano into}

Sept 7th

^{at dusk I} Went ^{from} shining last night and shot an opossum hanging ^{from} on a tree. ^{suspended by its prehensile tail} It was very peculiar on color and had a very long tail ^{which was} ^{the} ^{for a much greater distance than the upper side} naked along underside ^{only but for a long way.} The genus ^{of this form is} Philander. During the night a vampire bit the guide on the forehead. ^{without his discovering it until seeing the blood clot in the morning} I noticed a bat come into the hut and flutter about ^{in the evening} me several times but was not attacked. It is possible that this bat is of rare genus Diaemus ^{which has} with white spotted wings ^{in the highlands} and attacks people ^{at this camp} ^{distinction to the vampire} Our mules were not bitten while the Diamens which attack mules never bite men in Peru. Berg told me that he was ^{once} ^{while camping} ^{not far from this very place} bitten by a bat at night on the face ^{on the Comerciato.} ^{we stopped on the summit of the}

From this point we

trail in the forest until night, and shined the road for a distance of nine miles to Yuvini. Saw only a deer on the forest road near the pacanal. Nothing was seen on the open grass of the pacanal nor in the forest on the other side of it. Shined a night snake, a small boain a tree which it was climbing. Eyes glared large and red. Arrived in camp at 11 p.m.

Shot another cebus on the summit at dusk as they were about to root for the night. The herd numbered about 50 and were very timid scattering in all directions. Only one returning to our call note and tree shaking.

Sept. 8th. Remained in camp all day skinning mammals and birds shot yesterday. Comerciato. A few light showers passed over at mid-day.

Sept 9th With a guide I went over across the river for the black spider monkeys but neither saw nor heard them. Saw a red deer, Mazama, at one of the cuples which ran up the bank and then stood behind a tree with the hind quartered and posed. I fired at these with the 22 rifle and then she went a few yards and stopped behind another tree. I fired again and she went hit dropped pace down a hill. A few minutes later I saw at the culpe lower down I saw a greyish animal with shuffling gait. It was a probably a prehensile tailed anteder but I could not see it distinctly. Before I could get the shot gun from Jose it passed out of sight.

We returned by way of the margin of way back to the river and on one of the sand flats I saw the tracks of a taper but only in this one place. Saw also a cat like track size of an ocelot no deer or Dasypoda tracks. Shot one of the large colored slate tinamons also black brilliant and blue tanagers. Rained at 2 p.m. and again at 5.30 p.m.

Sept 10th As Narciso had heard the monkeys calling lower down the river slope we returned to-day at noon and took route up to the first culpe but saw no monkeys or other game. At 4.p.m. we returned to the road and went to the pacanal from which we started at dark using the head-light for game on the way but we saw nothing however. I saw a brown viper coiled lying on a dead palm stem of the same brown color. The viper showed no movement but coiled up and I shot at it. This is perhaps the same species as bit a Machiganga as he lay hold of a limb climbing a tree.

157

The man was ^{made} very sick but recovered. ^{by the venom} ^{finally} ^{Another attempt to secure}

Sept 11th ~~Went again for~~ monkeys across the river ^{was made today} with a ^{then} ~~Laona~~ guide who was sure he could find them. He took us up to a large ^{following it to its very} ~~culpe to merits~~ head ^{from which} where a trail leads to ^{some} ~~the~~ salt ^{licks on a} cliff of black shale. We ^{a few} ~~saw~~ no monkeys but shot a red headed tinamon and saw ~~one~~ small tanagers. The guide ^{told us} ~~said~~ that there are nine species of monkeys ^{in the Yurini forests} ~~here: 3 reders, 2 black, 2 small ones~~ 1 ~~pastry colored and 1 night monkey.~~

Sept 12th This morning a Machiganga ^{offered to} guide ^{us} to the bridge across the river above the camp ~~and in~~ and so we went with him and ^{an interpreter} Majordeur ^{had been built by the savages and} The bridge was very shaky ^{ing only} and consisted of ^{slender} long poles lashed together with bark thongs. ^{after crossing the bridge we} We ^{ascended} went up the hill and down into ^{a deep valley with a small} the large ^{at the bottom} culpe or forest stream and met a troupe of 8 black ^{then dropped} spider monkeys. ^{was met with here} I shot into ^{several} of them at close range but failed to knock any down. ^{and the all escaped us} the culpe to the river and returned along the shore. Saw no deer or other track in the sand or mud. The men saw a squirrel. No large birds were met with. Day clear and warm with a good breeze.

Sept. 13th ^{clear and warm with a good breeze.}
~~Was another sunny day~~ ^{Weather bright} with good ^{cool} breeze. I left camp at 9 a.m.
 with ^{two} guides and one ^{pack} mule for the ^{the} Comerciato. ^{river} We camped
 at the ^{first shelter hut} ~~1st Tamba~~ ^{camp called the} at the Playa where we arrived at 3 p.m.

Shot another large slaty tinamon and also one of the small ones
which ^{are} the size of a ^{woodcock} ^{Flax} ^{were collected today} ~~lobulate~~. Shot ^a new birds ^{one red};
^{a rufous} ~~schreech-owl~~, ^{another} a red ^{billed} ^{am} ~~belied~~ jacobinar, ~~bird~~ and a large
billed olive barbet, ^{and} ~~also~~ a long tailed tody tyrant. The guide
shot another one of the ^{which has a growling call note similar to the spider} ~~large growling currosows~~. Set other ^{moths}
traps in the river ^{the water in the river continued} but saw no others. Water muddy but not high.

x At dusk many of the large Rhylostomus bats appeared flying in a sort of hauling for insects flocks above the river. I shot a pair of _____ and _____.

Sept 14th Caught nothing at night in steel traps or rat traps either.
 The ^{was} Day ^{and very hot} bright ^{and} clear. Remained in camp skinning birds while the guides went up the Postachiato creek. ^{on a search for monkeys} At 4 p.m. we caught a fine ^{adult} ^{female} otter in one of the steel traps which I set at the base of a large tree. ^{at the river side} This ^{species is much smaller than the} occurs ~~not very large not great~~ ^{clawless} ^{two} ^{of the} ^{gaily colored} ^{brother} ^{was} Brazilian ^{condition} species. She contained 2 small embryos, stomach contents fish bones only, ^{fat}. We also caught a fine gallinule

having three ^{the} colors on body in a steel trap ^{set for other at the river margin} at noon by the leg. The

guides came in late without having seen anything or fired a ^{game snare or} ~~gun~~ ^{made by bending down} but saw many Machiganga ^{saplings} traps in the forest.

Sept. 15th Moved ^{camp the river} up to the Machiganga Village at 8 a.m. On the way I saw ^{curassows three crested} a as well as many smaller birds two partridges and ^{the} white-coated curassows but no mounds. Took photos of ^{the} Machiganga ^{huts} houses and boats. ^{we exchanged} ~~also traded~~ ^{and salt} knives for bows and arrows. In one ^{hut} house I saw the skull and meat of a ^{hilled howler} freshly red barber monkey. ^{From one savage I obtained by barter} ~~Traded also~~ for a set of Peter pan pipes which ^{he had made} they make of reeds of ^{graduated} various lengths. At dusk one Machiganga brought in about ^{thirty} 30 small fish of ^{five} 5 species. ^{Two species} ~~2~~ were gobies, ^{two} 2 shiners and ^{one} a cat fish. These he ^{or barbel} caught by hand in a rock pools.

Sept 16th I Went hunting ^{this morning} howling monkeys with a Machiganga. We ^{travelled thru the forest} went above the village to some culpes where ^{the savages had} we could hear them howling ~~that~~ at 8 o'clock. We found a troupe of about 10 ^{this morning} and shot 6 of them: ^{one} 2 old ^{two} males, ^{two} 2 old females ^{two} and 2 ygs ^{one} males and a nursing yg. They ^{one} ~~troupe~~ did not leave the trees together, but ^{A few remained hidden} some stayed for a half hour high in the branches after we had fired on the ^{those in sight} others and made much noise. They are quite stupid and leisurely ^{in their movements} compared to the alert ^{actions of the} black spider monkeys. The throat of the old males ^{is} are enormously swollen and bare where the ^{so as to accommodate the} larynx is enlarged.

^{no developed} into a great sound box. Stomach contents of all were figs which ^{gathered no doubt from the trees in which they were discovered} occurred abundantly in the forest. Left at 3 p.m. for Yuvini ^{the afternoon & returned to Yuvini} where we arrived at 9.30 p.m. and found M & F in camp.

Sept 17th I Remained in camp skinning monkeys and birds. ^{The weather continued} Day rainy. ^{with a Machiganga guide today} ~~Day rainy~~ ^{without success}

Sept 18th Went monkey hunting ^a across the river but saw none. Day rainy ^{species of} all day. Shot a new black curassow also a new gualala or cha-chalaco ^a near camp; also a ~~trozen~~ and red crested finch. Saw a king-fisher on the ^{Yuvini} ~~Urvin~~ creek ^{which is} the first I have seen in Peru

Sept 19th Day rainy. Went to the bridge and set the ^{fish} net in a stone bordered channel ^{for minnows}.

Sept 20th ^{There was} Caught nothing in fish net as ^{the} leaves blocked the entrance. ~~Can~~ We ^{no} caught on bats in rat traps baited with bananas and set for bats ^{where Beng has secured them with strickline on bananas} at the finca. M. & F. left this morning for the mouth of the Cosireni with ^{eight} 8 quichua carriers. Shot small birds near camp ^{six} where I obtained 6 new ones and ^{three species previously} 3 already taken at San Miguel Bridge. Day misty.

157

Sept. 21st ^{we} Moved ^{camp} over to the Comberciato River this morning but as it was raining ^{we} did not start ^{at} ^{10.30} ^{am.} Made camp at the mouth of the ^{we encountered} ^{creek} ^{at} ^{3 p.m.} ^{Phyllorhiza} ^{individual} ^{vari-} ^{ation} ⁱⁿ ^{color.} There was ~~nothing in the other traps.~~ The river was much higher and muddy.

Sept. 22nd. ^{we} Made camp at the Indian village at noon. Day clear and warm.

~~Saw nothing in road up.~~ The Machigangas did not come to camp as they were all ^{intoxicated} ^{cassava} ^{some event} ^{drunk} with chicha and celebrating. The guide caught two ^{small} cat fish in the river with ^a ^{hook} and line.

Sept. 23rd ^{Quichua} The ^{four} ^{in quest of} ^{near the hill summits} ^{two} ^{with Jose} ^{following} ^{guide} and Machigangas departed this morning up one of the tributary streams ~~for~~ black spider monkeys which live higher up and ^{two} ^{days} ^{journey} away. I ^{walked} ^{with Jose} ^{to} ^{where} we shot the squirrel monkeys with Jose but saw no mammals or large birds. ^{indigo} ^{the} Shot a new jay on way and later two others at camp. ~~The whole country forest here and elsewhere in the vicinity is without mammals practically. No rodents are in the woods and traps catch nothing. Opossums, are rare and deer are scarce, so are~~ ^{are rare} ^{pecarries,} ^{cats} ^{and} ^{squirrels.} Small birds are also rare and large ones are seldom seen although there are many different species. ^{to be found here} I think this absence of mammals is due to the great abundance ^{of} ^{biting} ^{flies} ^{of} ^{many} ^{species.} ^{voracious} ^{ant} ^{are} everywhere and meat ^{bait} cannot be used. ~~The~~ ^{rests} ^{for a few minutes} ^{are} ^{bothered} ^{by} ^{flies.} If one ^{sits} ⁱⁿ ^{the} ^{forest} ^{within} ^a ^{short} ^{time} ^{biting} ^{flies} ^{are} ⁱⁿ ^{numbers} ^{that} ^{it} ^{is} ^{necessary} ^{to} ^{move.} In africa where game is in abundant ^{flies} ^{are} ^{never} ^a ^{great} ^p ^{past} ^{as} ^{they} ^{are} ^{here.} ^{in the low Amazon basin} The vegetation is luxuriant and with ^{it} ^{would} ^{grow} ^{an} ^{abundant} ^{fauna} ^{if} ^{flies} ^{and} ^{insects} ^{generally} ^{would} ^{allow} ^{mammals} ^{and} ^{birds} ^{to} ^{exist} ^{freely.} Day clear and

Sept 24th Santos, the guide, and ^{the four} ⁿⁱ ^{three} ^{adults,} ^{black} ^{At-} ^{ele} ^{an umbrella} ^{two} ^{or} ^{male} ^{was} ^{more} ^{very} ^{large} ^{exceeding} ^{the} ^{females} ^{greatly} ⁱⁿ ^{size} ^{and} ^{her} ^{several} ^{organs} ^{were} ^{quite} ^{Hyaena} ^{like} ^{that} ^{is} ^{the} ^{chitinous} ^{not} ^{very} ^{long} ^{with} ^{the} ^{vagina} ^a ^{slit} ⁱⁿ ^{its} ^{base.} The ^{had} ^a ^{small} ^{testicles} ^{black} ^{so} ^{that}

the sex differed in external appearance is not much. I shot a female, a full grown solitary one which is a very peculiar state for these sociable monkeys. The monkeys here are very local and are not generally distributed or wandering. It is necessary to know where they live and hunt them in such spots in order to collect the various species. The black tamarins and squirrel monkeys and Cebus are exceptions to this rule. They move about and may be met anywhere in the forest but are

nowhere abundant

Day cloudy and partly rainy.

Sept 25th Remained in camp skinning monkeys and birds. Santos went out

for squirrels and brought back a small olive colored one previously seen by me. The rusty red species I saw several days ago he failed to get. He shot 8 partridges, and 2 white curassows also a long yellow tailed parrot. I caught a large Neotomys near camp

and shot a yellow winged seaside finch. Day cloudy with some drizzle. Went skinning out at night below the camp on the trail

At the culpe de paros I shot a tree boa 78 inches long. The eyes shine well as it lay downward on a vertical tree stem 3

feet above the ground. It was a powerful constrictor and I had difficulty in pulling its coils off the gum barrel. I skinned

a mammal in tree top a bassinera I supposed. I knocked it down but could not find it. It remained in the tree for one hour while I went for the gun and moved very slowly.

It fell to my shot

Sept. 26th Santos went squirrel shooting and brought in one large red

species. The Machigangas here feed on yucas almost exclusively. They also make a choice of it and they were intoxicated by this stimulant the day we arrived. A few fish and monkey meat help

out the diet. They grow also a few papayas and pine apples. Cotton is also planted and is used for weaving cloth. Maize in small quantities was also seen in the huts. Went out skinning

at night but saw nothing.

Sept. 27th Started at 7.30 AM to return to Yuvini. saw no monkeys or squirrels

on journey except at the crest of the pacanal where we met a troupe of Tamarins which skirred away at once. Found Maynard and Dr. in the camp returned from the mouth of the Cosiriz.

They reached the mouth in two and half days very steep over a very rugged dangerous trail which followed the face of a great cliff

at night but saw nothing

where the way was
~~trail~~ In many places they encountered cliffs and narrow ^ledges almost impassible. They saw a single ^cpecarry and a troupe of brown cebus monkeys. The tracks of the ^ataper were seen on the *soft mud of the* river ^{margin} in the same spots ^{two} for 2 nights consecutively. Ducks and currosows were the only large birds seen. No Machigangas or ~~Umamba~~ ^{other tribes} were met ^{with} except a few ^{individuals} on the way down. The elevation at the mouth of the Cosirin ⁱ is 2,000 ft. ^{by their observations}.

Sept 28th Remained in camp labelling specimens Day partly rainy but ^{the} night ^{was} clear.

Sept 29th. We broke camp and journeyed up to San Fernando. ^{where we made camp at 3 P.M.} Day cloudy but no rain ^{fell on} trail. Santos shot a black currosow ^a and a new quail dove and a flycatcher enroute. I saw no mammals or other squirrels near the road. Met Lewis ^{our muleteer} returning with the pack mules from Ollantay ^tamba. At San Fernando we found an old man who had taken possession of the house and was living there with the Machiganga boy Julio and ^{G. i} a Luchua Indian.

Sept 30th I went down to the San Miguel River opposite ^{our camp} the S.A. with ^{boy} Julio, the Machiganga, who spoke good Spanish. We saw a fresh deer track and many old ^apecarry tracks at the culpe near the river bank. In the peanut field ^{near camp} we saw fresh jaguar tracks in the ^asandy soil. Santos returned without any mammals. Some of the Yuvini men brought in a small ^{securing}squirrel ^{which they had} shot with an arrow on the way up ^{to San Fernando} here. ~~Went out shining down the trail but saw nothing.~~ The Machigangas are ~~very~~ honest and have taken none of my traps although they were with us ^{over me} when we set them. Their civilized neighbours the ^{Q. i}Luchua Indians are ^{inveterate} terrific thieves of ~~traps~~ and untruthful as well. The Machigangas have great love for ^{animals} pets and domesticate all the species of parrots ^{inhabiting the region} except ~~perhaps~~ the macaw. ^WMonkey ^{said as well as}pecaries, the parrot, trumpeter and other birds were found in ~~great~~ numbers about their huts domesticated.

Oct 1st Rained during the night and ^{early} in the morning ~~also~~. ~~Last night~~ and the night before I went shining along the road but saw ^{large animals} nor heard nothing. I caught ^{five} more tree rats in a hut, ^{two} black Oryzomys and ^aspiny neotomys mouse. Santos brought in a small squirrel. I shot 4 new birds to-day, a small blue and black

colliste tanager, a long bellied ground-wren, a yellow warbler and a ash throated flycatcher.

Oct 2nd. Caught 2 more tree rats, one spiny mouse and ^{two} brown oryzomys Santos brought in a large tinamou and a quail-dove. I shot a large red bellied hermit hummer. Maynard and ^{Hord} ~~Dr~~ came in from Yuvini at 3 p.m. ^{and joined our party} Day partly rainy with no sun ^{at intervals} the rain fell in short showers with some ^{distant} thunder at a distance.

Oct 3rd I caught more ~~of~~ Rhipidomys and Oryzomys mice but no new ones. ^{species today}
^{The Machiguaga boy} Julio, brought in many lizards ^{which had} ~~with~~ heavy spined ^{scaled} tails and green heads, and ~~galeucous~~. Jose caught a small slender ^E eumeces ^{like} lizard and several night ago I caught a ^{crimson} snake marked by black rings ^{dorsally}. Lizards are seldom seen here however. The day was cloudy ^{and} with rain showers ^{fell} at ~~rare~~ intervals.

Oct 4th We broke camp at 10 a.m. and started for Iduma The day was bright and warm. I shot several new ^{species of} small birds on the way; one ^{was a} metallic green and brown ^{another} colliste a red tanager with black wings, ^{and a third} a small species of indigo ant-strike. We slept in our saddle blankets and ~~made~~ ^{had only} tea. It rained ^{for dinner owing to the failure of the pack train} thundered during the ^{accompanied by} night ^{and} with much lightning. ^{to reach us before dark}

Oct 5th Our pack train arrived at 8 a.m. and we travelled up to the huts near the summit of the pass where we arrived at 11 a.m. The day was foggy with misty rain. ^I saw many small birds and shot the ^{male} of a pair of torrent ducks near our camp. I saw several of the ^{indigo} ant-shrikes, also black robins and other familiar birds.

Found two women and ^{some} children in the huts but no men. They ^{had} kept a few cows, chickens and pigs but ^a rise no potatoes or crops ^{vegetable} apparently. Near here in the creek ^{the rocks} are all coated bright ^{the red rocks} ferrillian red ^{by} a minute fungum ^{but} at first sight look ^{it}

^{Squerefrata} as if stained by an iron compound. The camping place is called ^{ppata} ~~Cherapata~~ or ~~Quirapata~~ and has an altitude of 11,400 ft by both of our aneroids which were corrected at Lucma. The pet monkey Lagothrix ^{from a Machiguaga youth} bought on the Comerciato died at San Fernando from the effects of the climate after ^{only four} days residence. They

^{This species is} ~~are~~ very tender and all have died ^{in transit} which have been taken ^{to out of their} ~~to~~ ^{habitat} ~~from~~ according to the statements of the ^{Machiguaga} natives. They ~~look~~ are the most affectionate and gentlest monkeys ^{found} in the low ^{Amazon} country but I believe ^{this species has} they have never been exhibited at Zoo ^{logical Gardens} ^{owing to their susceptibility to a sharp change in climate and}

^{their}
~~owing to the~~ lack of hardiness to resist transportation.

Oct 7th ^{We} Caught ^{three} ~~3~~ species of mice, 16 specimens in all. ^{one} was a new ^{species of} white bellied Rhipidomys but ^{the} other ^{s were} euneomys and ^{of} Oryzomys. ^{The} Morning clear and bright but cool. ~~M & Dr left for Lucma at noon.~~

Oct 8th ^{as it} Morning was rainy ^{in the morning we} so I could not start for Iduma until 11 a.m.

^{We} Travelled some ^{four} leagues and ^{then} camped at Iduma Pampa near a cattle herders hut ^{situated} at the head of a black ^{soiled} grassy valley. We ^{during our journey} crossed ~~these~~ two valleys near the ^{if} head and camped in the third ^{one}.

^{The} ^{rock was} country everywhere granite, ~~and without forest except a few and~~ ^{mountainous} Groundsel trees. The country was ~~Resscleans~~ and covered with ^{the valleys were boggy} grass. ~~and wet everywhere.~~ I saw a few birds but no mammals. The ^{of the passes} altitude ^{averaged} ~~varies~~ on the road about 12,000 ft. All the people ^{we have met} pronounce Iduma as Ichuma ^{omitting} without the d sound. The mountain ^{crest} ^{are} in here is chiefly granite ^{in structure} but ~~no~~ snow fields ^{of permanent} were seen anywhere. ^a Although the altitude of the ^{summits} crest ^{at least} must be ~~about~~ 15,000 ft.

Oct 9th ^{We} Remained ~~in camp~~ ^{at} Iduma Pampa as it rained most of the morning. The ^{at this spot} altitude by aneroid is 11,200 ft corrected by ~~add~~ 500 ft. ^a Went deer and visacha ^c hunting with the owner of the hut who said both these ^{species of} animals were abundant. Rain however kept us from seeing ^{paratfield} everything. I shot a ^{species of} indigo warbler and a specimen of the ^{lark} wren we found so common at Occambamba Pass.

The road ~~over here~~ for the first league is flaggard by large flat granite stones and built ^{three} ~~3~~ ft wide ⁱⁿ straight lines and is one of the ancient Inca roads. ~~but~~ ^N no ruins of terraces were seen ^{however altho} and the road ~~does not appear to continue~~ built of stone ^{at interval} ~~for ten leagues or more~~ very far. The two summits ~~over the ridge we climbed I should~~ ^{during the night} estimate at about 12,500 or 13,000 ft. I caught ^{three} ~~3~~ species of mice; ^{two E} ~~last night~~ ^{omys a} euneomys and a yellow Oryzall species

~~taken before. We departed on our journey for Iduma.~~
^{Early in the morning we departed on our way to Iduma.}
Oct 10th ^{The} road was flagged by heavy stones and ~~3~~ ^{five} ft wide most of the way but was washed out in many places and the ancient Inca road destroyed partially. ^{Two} ~~At 2~~ hours after starting we crossed a good sized river which heads near ^{at this point} Lunca pass and ~~here~~ the Lucma road joined ~~on~~ our road. There was a hut here but no inhabitants. ^{near the crossing} The road continued flagged by granite blocks of Inca construction. At 1 p.m., or two leagues farther on, we

4. fleeing animal a made

Oct. 11

more found.

The country at our camp is divided into small fields by stone walls which are low and broad ^{some four feet} ~~4 ft~~ wide and arranged as

regulation Inca

terraces in a new fashion. Water ways or ditches are found on the hillside ^{which supplied these} and also rough terraces formation. Most of the ditches in use at Idma ^{at the present day} seem to be based on ancient waterways.

Oct 13th The day was rainy. I caught several ^{mus musculus} ~~mus musculus~~ in the fields ^{set yesterday for agoutis or cihayrus failed to hold} which pulled free their feet and ^{Dr.} ~~Dr.~~ escaped. Ford came up yesterday to administer to Narciso

Oct 14th I ^{climbed} ~~went~~ up to the forest ^{of them} ~~gully~~ where we saw the monkeys ^{yesterday} but saw nothing. I set some traps for cihayrus in ^{run} ~~edge~~ ways at the edge of the Yuca field. The natives say that they come ^{only} to Yuca fields to feed ^{so} and we looked about the edges of the cocoa and corn fields but could find no runways to dispose ^{rove} their assertion. At dusk I went down to the ranch house to shoot bats but none came ^{from} ~~to~~ the tiled roofs. They ^{mayordomo} showed me some in a store room ^{hanging suspended from the ceiling} ~~however~~. While I was there all the men lined up for the ^{if} evening call roll ^{as their} and then names were called ^{their labor for the day} and recorded in a book and each was given a cup of aguardiente which they drank on the spot or else poured into a bottle. ^{and carried home}

This is a daily custom at the finca. It rained during the morning. This ^{hacienda or finca} ~~ranch~~ is about equally divided between ^{the cultivation of} ~~cocoa~~ and cane. ^{There are besides} ~~fields~~ Some Yuca and corn fields ^{maize} ~~are raised~~ for home consumption. This ^{Idma was} ~~place~~ seems to be as low ⁱⁿ as the urubamba valley as the Incas ^{penetrated} ~~lived~~ and it still marks the lower limit of the present ^{of} ~~such~~ cultivation. Peru to-day does not extend its civilization much lower in the ^{is} ~~amazon~~ valley than in ancient times. The present population ^P ~~is~~ parasitic on the fields and waterways of the ancient ~~peruvians~~.

Oct 15th I ^{climbed} ~~went~~ up to the ^{co} ~~cocoa~~ fields where we saw the monkeys and ^{hy} ~~set~~ cihayrus traps. ^{was caught} ~~caught a~~ ^{male} weasel in one trap and a brown Oryzomys mouse in another. Shot several birds ^{on the way} all I encountered the black and white ant bird, a rufous-winged synaxillis ^{and a} ~~metallic~~ calliste. ^{A of these are} ~~all birds~~ common at San Miguel bridge ^{as well as} ~~Saw several~~ other species ^{seen today} ~~common there~~. This ^{Idma} ~~place~~ has the same elevation and climate as San Miguel Bridge and the same birds and mammals ^{in addition} ~~fauna~~ but has an infusion of lower ^A ~~amazon~~ species such as monkeys, ^{two} ~~maz~~ deer, peccaries etc. Collected ^{of the} ~~species~~ of bats ^{genera} ~~collosphaps~~ and ~~hermideros~~ in the ranch house. No ~~altomedes~~ ^{leucoderma}

or blood-sucking bats ^{occur} over here to molest mules and stock ^{other live} generally. The day was rainy, ^{hu} at dusk I hunted cilmayrus in the yuca

^{fields} Yucal. I saw one at a long range and fired at it but did not kill it. We saw another a long way off ^{which dashed away as soon as it detected us.}

Oct 16th ^{hu} Went up early to the Yucal but saw no cilmayrus. Jose brought in ^{five} ~~5~~ euneomys from the ^{traps set in the} cocoa field and a sad tale of two steel traps sprung ^{by cilmayrus which left only} and only hair in them. ^{The 5} ~~Caught 5~~ euneomys all have shorter tails than those ^{collected at} of Toronto. I went to the Yucal at 4 p.m. and waited till dusk but saw only one cilmayrus. This one came out only a few yards ^{beyond the brush margin} and sat on his branches for ^{several} minutes long time looking for danger. He appeared perfectly black. I fired at him ~~but~~ missed and he dashed into the ^{brush out of sight} gulch then the bush. Every day we have some of our steel traps set on cilmayran runways sprung but none have yet been captured this way. To-day a laborer brought me a fresh skin of an opssum. This was the ^{being} only dryest day we have had here cloudy with only one ^{slight} ten minute misty rain all day. ^{of only ten minutes duration}

Oct 17th ^{the results today being} It Rained hard all morning. Caught no cilmayrus in the traps, ^{specimens} only a few more euneomys in the rat traps. I went with ^{hu} Mayardomos to ^{two} other Yucals where ^{we found} there were cilmayrus runways and set traps there. ^A ~~Saw~~ a convey of 5 guans or ^{five} ~~Penelope~~ ^{of the genus} in the bush as I setting the traps. ^{I collected five} ~~Got 5 more~~ Hemiterma bats in the ranch house but saw no ^{more} Glossaphagas. ^{there}

Oct 18th Another all morning hard rain occurred. I went out at 1 p.m. as soon as the rain stopped but found the ^{hu} cilmayrus ^{traps} unsprung. They must have ^{been eyesight for they} a good eye for hard ground and refuse to step where the ground has been disturbed above the buried traps, for ^{if} their sense of ^m smell is defective ^{was not} and the natives could not shoot them at ^a 3 ft ranges. ^{only three feet} Those I have ^{observed closely} seen gaze about intently when they came ^{to} out of the Yuca fields and ^{or danger} seem to depend chiefly on their sight to detect an enemy. I caught a light brown ^a species of Oryzomys which looks different from the others I have secured. I shot a new pigeon to-day of a ^{pretty} vinaceous and blue color. Lewis brought in the supplies from Ollantaybamba. ^{by pack train}

Oct 19th The morning was cloudy but rainless. I went to the Yucal ^{hu} for cilmayrus but a heavy rain spoiled ^{the} hunt. I saw one small

^{the} cilmayrus which ran straight into the Yucal thicket and did not stop to look for further danger, in the rain.,

Oct 20th ^{A ~~hu~~ was held in one of} I caught a cilmayrus in the steel trap at last but he left ^{eventually} escaped by ^{tearing off his toes and leaving them in the trap} only one two. A boy herding mules said he saw him early ^{in the} morning in the trap. I saw another cilmayrus in the Yucal but did not get a shot at it. ^{The day was spent collecting small birds.}

Oct 21st ^{Today} I caught only two brown Oryzomys in the traps. I shot two new birds; a very small ^{species of} dove and a yellow superculiary ^{Kingbird} ~~stupid kingbird~~. I saw no cilmayrus at the Yucal grande The day was rainy.

Oct 22nd We broke camp at noon and moved down to Santa Ana. The day was dry and clear for several hours in the morning. At Santa Ana ^{we found the weather} it was dry and hot without any evidence of any recent rain. Sr. Carlos Duque ^{an old friend of Mr. Bringham's} took me into the house bag and baggage. Very little or no forests occur on the hillsides below Iduma. Along the roadside grew a second growth of bushes and small trees. I shot a few birds on the way down but saw no new ones. The long tailed tija ^{occurred in abundance along} was lizard ~~was common on the road also the~~ spotted rock lizard. The aneroid registered at Iduma 4,700ft and at Santo Ana 3,600 which is marked on the map 3,480ft. ^{by correction} This would give Iduma an altitude of about 5,000 ft. Cilmayrus, ^{smaller} ~~scated~~, brokets and other mammals are said to occur here as at Iduma.

Oct. 23rd The day was partly cloudy but no rain fell. I caught ^{twelve} 12 bats in the tiles of the roof. Two species were ^{by suspending a net over the house} only secured; the commonest was a small Mollossus and the other a brown Myotis. I spent the day skinning birds and drying specimens ^{using} at the the cocoa drying carts. The traps set in the sugar mills had only two ^{Mus} ~~mus~~ muscules in them.

Oct. 24th ^{Secured early in the morning} I went with Carlos Duque to the Arubamba river ~~with a seine~~ to catch fish. The river was muddy and in one of the back waters we found an ideal place to fish where there was a mud bottom. We caught ^{by the aid of the seine} some 50 small fish of ^{three} 7 species; a cat fish and ^{two} 3 kinds of shiners. I found a large brown snake ^{seven feet in length} which was ^{had been} just killed upon which vultures were feeding but I secured it for the ~~museen~~ ^{garage} museum. I saw two of the black coronants ^{more seen} on the river. I shot a small blackish grass-quit in the cane-fields

also a black white winged tanazer. Jose caught in the traps
^{two} 2 Euneomys and a large ^{0 2}oryzomys at dusk. I hung the seine ^{again} over
the roof tiles and caught ^{Twenty-two specimens of} 22 Mollosus bats but no Myotis as
they issued from the tiles at dusk. Day partly cloudy but no
rain. ^{fell at the Hacienda of Santa Ana}

Oct 25th In the morning I went bird shooting in the cocoa fields but
^{such species of} found only ^{as} birds I had already collected. I shot a black
tanazer, a rufous Synaxillia, a dusky finch and ^a pigmy ^mdove.
In the evening I caught ^{eleven more} 11 bats in the seine hung over the ~~the~~
tiles of the roof; ^{Three} 3 were myotis, and ^{eight} 8 Mollosus. Carlos
Duque caught a tree rat ~~in his office and we caught~~ ^{and} an opossum
in the sugar mill. ^{We} Saw several of the large Phyllostomous bats
in the sugar mill ^{at night} but could not shoot any owing to the darkness.

Oct 26th ^{Santa Ana} We left at 10 a.m. with ^{the} a pack outfit for ^{Hacienda of} San Rosa where we
arrived at 5 p.m. in a ^{torrential} rain storm. Went out ^{hunting} with the manager
for cilmayrus but saw none in the Yucal. The ranch is planted ^{for export}
^{hu} sloely with some cocoa ^{but} and some Yuca and corn ^{are grown} for home use. Our
way up the valley ^{from Santa Ana} was the road was bordered by tall acacia ^{with}
^{bearing} white blossom, Piptadenia. A tall ^{Gerens} catus was ^{also} common
on the road-side ^{trees} trees. Algorobos were seen at Santa Ana and
many Pala Santos grew on the gravelly bars and creek margins
there. ^{also}

Oct. 27th A heavy thunder shower raged during the night ^{for several hours} nearly all the
night and much rain fell. ^{Brooke camp} Left at 8 a.m. and ^{journeyed} went to Huadquana
where we arrived at 1 p.m. The ^{hacienda} ranch is devoted to the same ^{cultivation}
^{of cane} only no cocoa been grown here. ^{Traces} Saw Pala Santo and white flower-
^{were in evidence} ed acacias all the way up the ^{valley} urubamba to this point but they
do not occur farther up ^{in the} the granite Canyon. Hillsides bordering
the river ^{composed of} were slates and shales ^{largely} up to this point.

Oct 28th. No rain fell during the night ^{from E} and I caught 4 Euneomys and one
^z brown Oryzomys ^{were caught during the night} in the cane fields. I went up the road following
^{the} Huadquania ^{creek} for a league to Yuca fields where I ^{found} saw one cilmayrus. ^{hu}
I saw very few birds and no new ones at all. Shot a blue and
vineaceous pigeon like the ^{species} ones seen at Idma. Several small
fields of cocoa occur here. Many ^{bearing fruit} aguacate or palto trees were
seen in the fields. ^{There} were also coffee, Yuca and pecay

in the valley marks
trees growing. Huadquania is the upper limit of oilmayrus, and such crops as Yuca, cocon and cane in the Urubamba Valley.

Oct 28th In the ^{afternoon} evening I went to the Yucal but saw no oilmayrus there. When I returned at dark I found Johnson at the Hacienda. He is an ^{American} ~~Montana man~~ married to a Peruvian woman with residence in Cuzco. He has spent much time in the ^{lowland forest region} ~~montana~~ gathering rubber ^{in the lower Urubamba} ~~er a year or so he spent at~~ Pondgo Mainique. He has seen sloths quite often, also the great tailed anteater and ^{occasionally} ~~often~~ the giant large armadillos. He has never met with a large snake of a boa type. Much of his time has ^{also} been spent on the Madre de Dios in ^{Peruvian territory} Peru low down where it is ^{navigable} ~~notable~~ by steamers. He ~~saw more~~ animal life there than at Pongo. The taxidermist Kalinowski, ~~a Pole is now at the Marcapata on the Madre de Dios, working rubber.~~

Oct 29th I left Huadquania at 8 a.m. and climbed up the ^{with Jose + Cerilo} ~~Nothos~~ ^{steep trail to Marahu} Picchu ruins. The day was misty rain. At San Miguel Bridge I ^{engaged} ~~picked~~ up Richarti and an ^{other} Indian who carried my bed and food up while Jose and Cerillo carried ^{the traps} ~~guns~~ and clothing. We reached the ^{ruins} ~~top~~ in about an hour and fifteen minutes. The large ruins were ^{much} ~~not~~ overgrown only weeds and bushes ^{by vegetation} ~~seen~~ hiding the terraces and walls. The city looked quite small and probably only held a ^{small population} ~~few~~ inhabitants most of the building were ^{built of} ~~only~~ crude stone work. ^{The temples however constructed} ~~only one I saw was really made of~~ finely ^{matched blocks of} ~~etched~~ granite. All the ^{available} ~~available~~ ground was planted to ^{maize} ~~corn~~ verrachos, most p potatoes and pumpkins. I saw no trees growing on the city site and no large ones near. The stumps of trees cut ^{at the time of our visit} ~~off~~ ^{several years ago by} ~~then~~ were occasionally seen. Richarti ^{told me that agoutis} ~~says the oilmayrus~~ and occur in the fields but I saw no tracks or runways. He ^{here and doubt his statement} ~~says~~ ~~anumayas or~~ Conepatus ^{occur} ~~are common~~, also weasels but no squirrels. He knows of no large rats the size of those caught by Indis. Vipers he ^{here and he exhibited two} ~~says are common~~ he killed ^{the} ~~two~~ recently on ^{to the ruins} ~~trail~~ in the sunshine I set steel and rat traps but saw no ^{evidence} ~~pills~~ of large ^{rodents} ~~rats~~. I saw one condor ^{soaring} ~~near~~ by also several white bellied doves crested sparrows and black headed goldfinches. Heard an owl ^{hooting} ~~rear~~ on ~~t~~ at the hut ^{we were camped in} in the evening. I saw the little white bellied hummer, also the black chinned ^{species} ~~and~~ the sparrow hawk. Bush chiefly Bamboo ^{tall} ~~and~~ grass and prickly accacia bushes

Oct 30th

Night clear, ~~and~~ bright and cold. I caught only one small *Oryzomys* in the hut and nothing in the fields or ruins. I saw this morning several red headed vireos warblers, white throated ground tanagers, crested sparrows, house wrens, and heard many *synxillis*. I saw at the hut several white throated Grosbeaks like those of Ollantaytambo. This must be their lower limit as none were seen at San Miguel bridge. The bushy country looks favorable for rodents but there are no runways or signs of rodents about. I saw a small species of swift quite different from the large ones which is common in the lower valley. The white-bellied violet swallow is very common. Cerillo saw a tinamou near the spring like the one shot at Peru. There is another spring below which supplies water to the lower city a wonderful view of rugged peaks is obtained from the north above Mador Pampa and Maquina. but only a narrow edge of snow mountain can be seen apparently on one of the Torontio Peaks. The country above Manda Pampa is very rugged and uniformly forested by a heavy growth of trees. The peaks are very sharp and reach an altitude of about 12,000-13,000 ft. This morning while poking about the country I ran into a nest of small black wasps like those met at Yuvini. They attacked me the same way. I had no idea that they could be found outside of low country. Machu Picchu is subject to sun shine for about 12 hours if sun owing to its open situation on a ridge far from the high edges. This makes it much warmer than the Umbamba Valley below which gets only some 7 or 8 fine hours of sun. On account of its exposed ridge it is much colder at night and has the climate as well as much of the birds and flora of Ollantaytambo. I have seen only a few of the San Miguel species of birds here. It is dry with very little moss and is not so humid as the surrounding country. The weather was partly sunny and without rain all day.

Oct 31st

Rained all night a quiet misty rain which continued till morning. I caught only a single mammal a *Oryzomys* in the traps. Stopped raining at 11 a.m. and we descended to San Miguel Bridge where we arrived at 12.30 p.m. The descent was slippery and dangerous. We returned to Huadquania at 4 p.m. The area now used in Machu

^{to} Picchu which ^{ancient} roughly half of the terraced area, supports only ^{his} ~~small~~ families ^{and is devoted to} to maize, verrachas, potatoes, ~~and~~ pumpkins etc. Machi Picchu ^{probably} ~~perhaps~~ never held more than 500 persons and then most of their food ^{must have been} ~~was~~ brought up from below. The ~~water~~ ^{largely} water also was carried from the river ^{in dry weather} as the springs flow very slowly and become quite dry in the so called ^{dry} season.

Nov 1st

^{From} ~~Left~~ ^{we proceeded} ~~Huadquina~~ ^{on our way} at 8.30 a.m. and reached Santa Rita at 4 p.m. where we camped in ^{a great level} the field. It rained during the night and also enroute ^{from} ~~to~~ Manda Pampa to Maquina. I saw very few birds on the road and only one new ^{species} ~~one~~, a small brilliant green spotted Calliste which I collected. At Santa Rita I saw a ^h ~~tatch~~ ^{growing} palm in the ^{forest} ~~Nantanya~~ with some small ^{or} ~~ones~~ near by and several large tree ferns. This is the only place in the valley I have seen a palm above Santa Ana and ^{is} no doubt the extreme upper limit of palms. The river continued ^{Urubamba} ~~on~~ ^{to carry much silt which gave it a} red ~~and~~ color like the Colorado. It is ^{now} ~~about 1~~ ^{one} ~~1000~~ foot higher than when normal and is very ^{in color muddy} ugly the water giving ^{the} rapids a nasty appearance. The maize is ^{already} ~~about 2~~ ^{three feet} ft high in the fields. Insect life is ^{more} ~~none~~ abundant than in July. I saw ^{in the road} several of the large blue butterflies so common in the low country, also clusters of the small black and red ones on ~~the road~~ ^{River} which were seen in numbers on San Miguel and ^{at} Iduma. The Palta ^{or} ~~aguacates~~ are now ripe and I purchased some at the Ambamba river junction. This point seems to be their upper limit in the valley as well as that of cocoa ^{cassia} and ~~Yaca~~ ^{Yuca}. ~~The Palta ripens from now till December only.~~

Nov. 2nd

It rained all night and part of the morning. We got away from ^{to} San Rita camp at 10 a.m. and reached Ollantaytamba at 4.30 p.m. No rain fell but heavy clouds prevailed all day. The country was green and wet everywhere. ^{on} ~~an~~ the canyon of the Urubamba the road was ^{adorned} ~~bordered~~ by the long red blossoms of ^{aspen} ~~Eucalyptus~~ ^{which were at this season} ~~which were also~~ covered by a profusion of yellow flowers. A ^{dwarf} ~~wall~~ ^{cactus} ~~Gerens~~ bore red and round blossoms and a round stemmed ^{was seen} ~~Opuntia~~ cactus in places ~~crossed~~ ^{adorned} by red blossoms also. I shot ^{three birds enroute; a buff} ~~new~~ ^{of the large} ~~of the large~~ throated

hummer ~~and~~ a small white and brown swift ^{and a} ~~I also shot a~~
^{lawr-} greyish ^{bird} ~~and a chimmed hummer~~. Saw many long tailed green
paradise hummer. ^{There were} Apparently the ^{males} of the small long tailed
hummer ^{where only females were seen} previously shot at Chospinoe. The giant hummer, ~~patagona~~
^{on the roadside} Patagona gigas was common, but I saw no brilliant males of this species.

Found Maynard and Hasbrouch only at ^{Yanquihuasi station} ~~Yanquihuasi~~ Hasbrouch
^{reported seeing} ^{spectacled} saw a bear a few weeks ago across the river from Santa Rita,
^{feeding} in the open grassy hillside far from any forest but refrained
from shooting at it. ^{owing to the impossible river barrier}

Oct 7th ~~I went deer hunting with Hasbrouch~~ ^{and I went deer hunting} at the head of the creek
on which the ruins of ^m ~~Punamarca~~ are situated. The day was
cloudy. At the pass which is about 15,000 ft high where we
intended to ^{hunt} ~~we were~~ stopped by a ^{driving} snow storm and ^a heavy
coat of ^{new} snow ~~for 8,000 ft~~ prevented us from further progress.
I shot a new hummer, ~~and~~ a black-headed buff ^{colored species} one, with a white
breast patch. I saw a large yellow flicker, also a pair of
hualata geese and many white shouldered wood pigeons in the
pass. ^{We} Returned at 5 p.m. ^{following} along the side of the valley high
above the mainroad which ^{skirts} follows the river. I saw one vicacha ^{c a}
near the base of the pass ^{close by an Indian} near the hut. Many other ^s live higher
up but ~~being~~ owing to the ^{snow} rain they were not seen to-day. ^{we} Saw
^{a flock of fifteen} 15 ^{at} condors above Panamarca wheeling overhead. The cherry and
peach trees are now loaded with green fruit about ^{one-half} normal
size and strawberries are just ripening.

Nov. 10th Shot ^{one of our mules} a lame for condor bait and placed him high above the fields
near some ^{ancient} house ruins ^{from our expedition headquarters} as a mile ~~above the house~~. I shot a long
tailed paradise hummer, and a gray warbler. I set three steel
traps at the mule's body but caught only a native dog. There
were ^{three} condors ^{high} flying above us as we were skinning the animal
but they ^{made no attempt to come near,} did not come down all day.

Nov. 12th ^{no animal disturbed} ~~I caught nothing at~~ the traps set at the mule's body. ^{The} condors
^{kept hovering from} came down to the meat altho a few were seen daily ^{soaring} above it.

Nov 13th We left Ollantaytambo at 10 a.m. with a pack outfit of ^{seven} mules
for Cuzco. ^{The} Day ^{was} clear and warm. Went by the way of the public ^{of}
of Maras and reached Cuzco ^{after dark} late at 8 p.m. after dark. Country
^{generally was} dry but ^{looked fresh} fields were fine and green with ^{growing crop} new ^{of maize} corn.

village or town

Maras is a large public of tiled houses and paved streets. At Lake ~~of~~ ^{which is a large body of water} Judao I saw white herons and teal ducks. ~~I saw also a~~ ^{in flocks near the margin}

~~A few new birds~~ ^{were noted} along the road; a blue-breasted yellow tanager ^{on a vine} and another yellow species. Saw also the white-breasted gray

A specimen of the

~~short tailed~~ ^{or Chilean} eagle. The common ^{was seen} birds were ^{the} goldfinches and ^{crested} sparrows.

Nov. 14th

~~The next morning~~ ^{and I left Cuzco for La Paz} Left Cuzco for La Paz with Husbrouch on a train at 7 a.m. Day

clear and warm. The valley below Cuzco was green with growing maize. At Sicuan ⁿⁱ station we stopped for lunch and visited the market which ^{is} filled a large plaza. The Indian women had various sorts of vegetable, knitted garments, pottery etc. for sale.

At Agua Caliente ^{just before reaching La Raya Pass} we saw a herd of 12 huanancos near the track.

I left the collecting outfit and Narcisso at Araranca station ^{situated a few miles beyond} over the La Raya pass to await my return from La Paz. ~~We reach-~~

~~ed Puno at dark and~~ ^{The train} stopped for a half hour at Juliaca ^{pre-} viously. In Plaza a long row of women Indian ^{the} had rows of knit

^{We boarded} knitted articles, socks, gloves, caps ^{and made of the wool} of llama and alpaca ^{for} sale. The steamer ^{at} left Puno at 8 p.m. for the lake Titicaca

trip. The night was clear, ^{and} moonlight ^{the} cold making over-

coats necessary for comfort. The american minister to Beliva Mr. O'Rear was a passenger from Cuzco and with him was a M.S. commerce and a Tabu man gathering Chamber of Commerce date from South America.

Nov. 15th

I awoke at 5 a.m. and went ^{on} a deck to ^{view} see the lake as we were passing through narrow strait between two islands. The islands

of the lake ^{looked} were brown and ^{sterile and were} divided into small fields separated by stone hedges. We saw several ^{sa} balsas or reed boats

^{near shore in pairs} fishing ^{to make them seaworthy} two being la shed together. The men were propelling these by long poles ^{much as we use oars} with ~~what they row~~. The pole is a rounded

stick without any paddle blade and is not very effective. For

^{at lunch} ^{were served} ^{fried} ^{species of} we had on the boat fine lake fish, a small flat perch ^{known to the Indians as} ^{Notwithstanding their name they were} call ^{as} bogus, very good in flavor with a texture of a flounder. ^{and quite equal to sole}

This is the only edible fish supplied by the lake. The view of ^{distinct peaks of the} the Andes was quite magnificent from ^{sunrise until} 6 a.m. the landing at

Buagui at

9.30 ^{am.} Beyond east of lake Titicaca is a solid chain of snow clad peaks the ^{steepest} tallest of which are Illimani and Marata. This chain extends for many miles unbroken and is doubtless the finest.

of which Husbrouch obtained one heart

174
sight in the whole Cordillera ^{of} the Andes. Nothing like it ^{comparable}
to this ^{ingratitude} ^{high} is to be seen near Cuzco or from the ^{route of the southern} railroad west of it.
The ^{east of Lake Titicaca} Andean range has appearance of the snow mountains of ^{ranges}
Alaska altho much more lofty, but the ^{sea} set of peaks has the
same effective snow clad appearance. Babies of European or
Concepcion stock usually die in infancy at La Paz and all throu-
gh the highlands due to the altitude but if taken to a low
altitude they survive and when two years old they can endure
the high altitude and flourish if returned there. This of
course is not the case with Indian, or Spanish american
children which flourish at high altitude. A condition of
this sort annihilates the possibility of European stock get-
ting a firm foothold without transplanting adults. At Guaqui,

^{the Bolivia lake port} we arrived at 10 a.m. and stopped until noon to await the ^{La Paz} train.
I saw many ^{lake} palpas on the ^{a neat appearance} ready shore. The town of Guaqui
has wide streets and ^{a neat appearance} is clean with a good looking Indian pop-
ulation. On the way to La Paz we passed the ruins of Tiahuanaco
which lay on both sides of the railroad. ^{The ruins consist of} Only some stone
pillars some ^{twenty feet} 20 ft high remain and are clearly visible from
the car. The view of the Andes ^{contained} was magnificent, ^{from the cars} the road as

^{The railroad as} it ^{at} neared La Paz approached Illimani and just before de-
scending ^{the} La Paz ^{gorge} the three great peaks of Illimani Marato and
^{Potosi} Paten tower ^{above the vast plain of Titicaca} above the B.P. gorge. From ^{the rim} of La Paz gorge the
city ^{lay} spread below us with Illimani towering beyond it. The
gorge ^{begins abruptly} ^{no evidence of it being visible from the} just beyond the city. It is composed wholly of clay
and boulders and is a ^{sedimentary} deposit, apparently an old
river channel.

Nov. 16th -18th ^{Three days were spent in La Paz sight seeing}
We went sight seeing for Joe Inslee a yale man, man-
ager of Concordia tin mine. ^{Soon after our arrival} We took a long walk down the river
to ^{some} a villa. The banks along the river and the ^{rim} ruins of the gorge
all the way was a conglomerate of clay and boulders. About the
^{residences} ^{some of} ^{woods} ^{seen} ^{species} ^{known as Aymaras} ^{and} ^{stand}
residences were large Eucalyptus trees, ^{some} also cottonwoods,
weeping willows, ^{some} apple and elder trees. Roses were
common in ^{some of the} gardens also corns. ^{The majority of} Most of the birds on the road-
side were different from Cuzco, sparrows tanagers etc. The
Indians here are ^{known as Aymaras} Arguaras a larger more alert race than the
Auchinas The women wear many skirts or petticoats which ^{stand} stick

from their bodies
out and give them a large hipped appearance, or ^a ballet dancer aspect. They were ^{effected as a head covering} a rounded cranned panama straw hat of derby shape which made them look ^{very unattractive} homely. They have superior fighting ^{qualities} to the Mochimas and ^{other} neighbouring tribes, ^{whom they have defeated in battle repeatedly}

Nov. 18th ^W Left La Paz at 1.40 p.m. on the train for Cuzco. Joe Inslee ^{seemed to be} went with us as far as his junction. The whole town was down at the station to see the train ^{depart} leave. The day was clear and warm. We reached Guaqui at dusk and boarded the steamer in the harbour where a fresh breeze was blowing. The night was clear with ^a full moon.

Nov 19th ^{The} Morning ^{was} clear ^{and calm} on the lake. We reached the wharf at Puno at 10 ^{some two} a.m. & hours late. Many water birds were seen in the reed ^{beds} on near the shore; ^{In the clear water could be seen the} also a small dark fish called bogus which is eaten and of very good flavour. ^{The birds seen were:} a large black coot, a large ^{dark} black grebe and a very small one with white cheeks, ^a also the black headed gull. a night ^{on} heron, many large ducks (mallard) and a ^{Several} few sand-pipers. ^{Saw} many of the reeds boats or balsas, ^{S were seen} some with a single man poling or rowing with his pole. ^{Pass} We Reached La Raya or rather the station ^a at Ararnca at 2 p.m. and found Narciso ^{waiting} at the station. I put up the tent at the station and set out some rat traps as the station men said there were many ^{or guinea pigs} correjos in the bunch grass. I saw several large blackish rodents ^{scampering along} or runways but caught none. Caught ⁶ six specimens however of a large fulvous and white ^{Rhipidomys} ~~chipidomys~~. At dark a heavy thunder shower ^{at the station} up and almost blew the tent away. This was accompanied by ^{as shower large} much hailstones and lightning from which the place ^{has derived} gets the name of La Raya. A small creek runs by the station which is said to ^{harbour two} have species of fish in it. Huanocos ^{viceroyas} are said to be common above the station and vicings across the valley. ^{and} Deer occur further down. Saw a condor flying above the station at 5 p.m. Bunch grass ^{covers the landscape} is everywhere but no bushes of any kind. Besides the grass ^{silky haired} a ugly ^{barred} sessil cactus was noted and also a ^{small} sessil green ^{species bearing} one with red flowers was seen on the banks also. A peculiar ice plant with showy red flowers ^{was the only conspicuous herb} was seen on the banks. ^{growing in the pass.}

176

Nov, 20th ^{the day} ~~When~~ Day broke with landscape covered by a heavy coat of ~~snow~~

sleety snow and the whole valley and mountain sides were

^{mantled in} pure white. Took several pictures of the pass and the heavy

^{fortunately it held the weight} fog bank which filled it. The tent had a load of snow ^{Bore heavy} upon ^{but} it also. The sun came up clear but it took ^{until} at 11 a.m.

before the ^{coat of} snow melted. Caught ^{four} species of ^{rodents: two} mice ^{and an} ~~Rhipidomys~~

one yellow ^{Phyllotis} ~~Phyllotis~~ ^{and an} ~~Andon~~. All ^{mammals living} the mammals here have long hair

^{coats of hair} to protect them from the snow ^{+ bitter climate} at night. At 12 noon the old ^{Indian}

drunkard ^{arrived} ~~Orland~~ with a horse and we ^{saddled} ^{climbed} went up the valley on the

west side hunting huanaco. About two miles ^{beyond} from the station

we saw a herd of ^{eleven} 11 feeding near the station summit on a grassy hillside. ^{To stalk them it was necessary to climb the opposite side} He went above the canyon and get above them

but before we could get down to their position they were

^{seeing} frightened by the old Indian and bolted. They kept uttering

a ringing alarm cry quite ^{or ringing cry} peculiar and ^{dashed} went away in single

file led by a large ^{female} ^{climbed} apparently. We went up the ridge

after them ^{em} but failed to see them ^{herd} again. We met however a

large ^{female} and ^{young} which ran past and below us some 200 ^{or} yds. I

fired at them and brought the ^{female} down in ^{her} tracks the first

shot. Then I fired ^{four} 4 shots on the ^{immature one} and killed ^{it} her. When we

approached the ^{female she} suddenly got up and in a few ^{strides} yards was out

of sight down the hill. Later we saw ^{her} ^{or} ^{immature} her 600 yds away walking

slowly along the hillside below us. As we were skinning the

^{me} a herd of ^{fourteen} 14 came in sight. Ten of these were Huanacos and ^{four} ^{immature} vicuñas ^{or} 4 vinegas. They stopped and fed at about 700 yds ^{at which distance} where they

saw us but later the old Indian who had ^{climbed} gone up to the summit

to drive the herds down came ^{so frightened them that they} along and separated them. The

^{vicuñas} vinegas going down the hill ^{and the huanacos up} but none came near enough for ^{within range of}

^{my position} us to shoot them. The huanacos are shaggy and gray brown ^{coated} with

black faces while the ^{vicuñas} vinegas are bright fulvous and shorter

haired. I was surprised to find them in mixed ^{herd} ^{two} herds. The ^{one}

we skinned had only grass in her stomach altho ^{at least} 2 species of

bush ^{grew} on the side-hills where they feed. On her breast the

skin was heavy ^{marked} and pad like as in ^{the} a camel and on the hind legs

were hairless pads or ^{How their} parts. Why they have such soft padded

^{adapt them} feet for the steep rocky hillsides they inhabit is a mystery

171

to me. I think that they have ^{only} ~~been~~ ^{taken} recently given to hill-
sides ^{haunts} ~~and in valleys~~ ^{on floors} that are ^{soft} ~~all~~ swampy ^{their} broad feet are ^{have certain} an
advantage. ^{sharp} Hoofs would be of better service to them in their
present habitat. The mixed herd ^{of fourteen} ~~of 14~~ feed quietly and only
uttered ^{their cries} ~~its notes~~ when alarmed and ready to flee for safety
It is probable that this ^{pass marks} ~~is near~~ the upper limit of the huanaco,
range as they were taken at ^{feet} 15000 ~~and that~~ their coats are ^{doubtless}
distinctly heavier than those living in the lower ~~argentine~~ ^{individuals}
plains. ^{such as the argentine region} At sunset the daily hailstorm ^{blew} came up and caught us
before we ^{could reach} ~~got to~~ the camp.

Nov. 21st ^{was} The day cloudy but no rain ^{fell} until dark. ^Q caught ^{two} 2 guinea pigs, or
correjos as they are called here. Trapped several species of ^{small} ~~rodents~~ ^{and} mice also. ^{I went hunting} Went at 9 a.m. with the two Indians for huanaco, in
the same direction as yesterday. ^N ~~Saw none~~ ^{were in sight on the ridge} ~~one~~ the wits where
we shot them ^{one} ~~yesterday~~ ^{day}. So ^{we climbed} went up far on the side of the
Valley to an open ^a ~~pampa~~ ^{dotted by small} lagoons in it. In the swampy
pampa we sighted a ^{sixteen} ~~herd of 16~~ vincungas which trailed ^{rapidly} off to
the hills when they caught sight of us. They were all adults
of the same size and absolutely alike in color. The huanaco ^a ~~we~~
have seen ^a ~~very~~ much in color ^{ranging} from gray to fluvous. We follow-
ed the ^{vicuñas} ~~vincungas~~ but the ground was too ^{open to allow us to approach} nearer then ~~200 yds~~
^{500 yards} so ^{we} ~~did not~~ ^{risk} shoot. While we were watching them ^{hard} several took a
roll on the ground ^{turning over} in horse fashion. Two others dinged in one
of the dinging places they use. The dinging places are ^{scattered} every-
where in the ⁱⁿ haunts and are ^{several feet} ~~10 ft~~ across and clear of ~~bunde~~
^{long} grass ^{and marked by a} ~~but~~ bright green ~~by a~~ growth of new short grass. The
huanaco ^s have the same habit. We did not hear the vincungas ^{at any}
^{time} ^{utterance to} give ^{any} alarm cry. Above the vincungas we saw ^{four} ~~4~~ huanacos close
to the ridge of the mountain and these were stalked. I shot at
them from 400 ^{or} yds but missed them and they ran over the ridge
after giving their ^{weird cry} ~~alarm note~~. I shot at them again far below
at 300 yds and hit two ^{or} ~~in~~ ^{individuals} in the hind legs which ^{or body} ~~made~~ ^{caused} them to
behind ^{the} ~~and~~ stand for a long time. I slid down the hill and shot
the large ^{two} one again but far back. He went a short distance and
fell but when I ^{approached} ~~came~~ started again. I hit him again ~~far back~~
^{and disabled him} so he could not travel. He lay on his side occasionally lifting

his head and squealing. I took several photos of his head while alive and then ^{killed as mercifully as possible} shot him with an 82 auto. He was an old ^{aged} male but not very old. His stomach contained only grass and the body was ^{in condition} lean as was the intestines. The other one which was also a ^{male} was quite ^{immature} ^{two years} ~~young~~ perhaps ~~2 yrs~~ old. I knocked this one down completely by a shot on the hip and left it for dead but later it crawled away. After skinning the first one I followed ^{the second one} it and photographed its ~~head~~ while in life. Occasionally it looked towards me while I was photographing ^{within six feet} at 6 ft but it ^a did not show real fight, ^{merely} only snarling slightly. The stomach contained only grass and the body was also lean like the ^{larger one} others. The other three ran away up the ^{mountain} water side calling occasionally but not waiting for the wounded ones. Saw no vicungas or ^{game} other mammals. A few pairs of Gualata geese were seen also ^{some} large plovers and a few mallards. No condors came in sight as we were skinning the huanacos. Reached camp at 5 p.m. in the usual evening shower and wind storm.

Nov. 22 I Remained in camp to skin the ^{the series} huanacos and a lot of rodents which I had ^{trapped during the past} saved for ~~3~~ days. Yesterday while I was at the train was at the station ^{some stray} dogs ate the head and tail of the first huanaco skin while Narciso was away. Caught a mouse ^a ^{from camp} a new one and ^{an} apparently a pygmy ^{sk} ~~spoon~~. Day partly cloudy but warm and quiet until 5 p.m. when ^a rain, hail and wind storm swept over us as usual.

Nov. 23rd ^{was} The Day cold, and windy but sunny very bitter ^{and} however like mid-winter. Caught another guinea-pig and a few ^{small rodents} mice. Went out at 9 a.m. with three Indians ^{hunting} for vicungas and huacacoos to the same pampa where we saw the ^{herd of sixteen} vicungas on the 21st. On the way up the ^{side} valley we saw ^a huacacoos on both ^{mountain} sides near the ridge ^s but did not stalk them. When we reached the pampa we saw two vicungas near a herd of alpacas. When they ^{approached two} came near the herd one of the alpacas would ^{charge} chase them and they would run away a short distance and then return ^{we stalked} for the two seen with the alpacas. As we approached the place they ran out from a steep side-hill unexpectedly and we lost them for ^{the} a day. Above the pampa on a rocky ridge we saw ^{two} huacacoos and these we stalked but they ran away ^{fled}.

179

giving ^{bray} vent to their peculiar mule ~~ery~~ like ringing ^{two} cry. The vicungas we started ^{lk} made no sounds and the large herd acted likewise so I presume they are quite silent. The Huancos ^h whenever startled ^{alarm} give their call ^{sometimes} and we ^{often} hear it before we ^{could} see them. While we ^{were} looking about the country from the ridge a solitary vicungas came up the side of the hill towards us and I shot ^{at} it ^{or} 300 yds. It was a ^{male} of adult size but not old. The stomach contained five bunch grass and an equal quantity of leaves and stems of a small alpine ^{herb} which grew on the ridge and which I collected for identification. A single condor flew over us while we were skinning the game. From here we returned to the camp following the ridge across the valley. When we reached the summit ^{above camp} we saw 2 Huancos feeding a long way off and which ^{on} seeing the old Indian above me gave the alarm note. ^A large ^{male} then rose up out of the grass near to us ^{and} I fired at him ^{at} 300 yds and finally hit him ^{or} through the lungs and again lengthwise through the stomach ^{and} intestines. He went down hill a short way and fell dead. He was a fine large ^{male} size ^{of} a llama and quite ^{aged} old. While we were skinning him a hail storm broke over us and the lightning played about us incessantly. The Indians stopped work on the skinning asserting it was dangerous and the old Indian prayed to the saints while the storm lasted. The ground was covered by a sleety coat of hail and snow which made our descent to the road quite difficult on the steep ^{grassy} side-hill. The stomach of this ^{one} contained besides the grass some serrated leaved sessil alpine herb. We reached camp a little before dark. The vicungas ^{lack} ~~had on~~ the breast ~~no bare~~ pad for resting on as the Huancos ~~have~~ and the hair is much finer and silky. The bunch grass which covers the whole country here is very stiff and ~~rounded~~ the blades are ^{rounded and armed at} ~~around~~ the tip with a sharp spine which ^{pricks} ~~enters~~ the skin when ever one puts out a hand to the grass. In setting traps it is necessary to use care in ^{turning} ~~shaving~~ the grass aside ^{to avoid injury}. Nobody ^{living} in the high puna sits on the grass after the initial attempt.

Nov 24th

189

Caught another of the pygmy ^{At} ~~apodon~~ and a guinea pig or koi as the ~~suchimas~~ call them. Went out for vicungas with the ~~three~~ ^{three} Indians. This time across the valley on the east side opposite the La Raya station but we saw ^{game} ~~nothing~~ so returned to the old place ^{on} the pampa we visited yesterday. On the way near the road we found ^{two} colonies of vischos ^{as a living granite} in the boulders. Shot ^{only} one but saw a half dozen ~~at~~ others. They appeared greyer than ⁱⁿ those of Ollantaytambo but ^{are} size about the same. On the way up the creek ^{the one was} we saw a herd of Huancogs where we shot one yesterday. On the Pampa ^{we encountered} ~~found~~ a herd of vicungas and these I stalked. They were very alert however, and saw me as soon as I broke cover and were off. I shot at them running and ~~also wallsing.~~ I killed one fine old ^{male} and wounded a ^{female} badly in the hip but she went away with the others. I got her later however. These vicungas ^{like the others we have met} made no noise when startled or at any time and seemed quite mute even when wounded. The stomach contents of the ^{male} consisted of grass ^{mixed} with a few leaves of prostrate herbs. The ^{female} left a heavy blood spoor and went away with the others ~~at~~ the wound having torn out the ham muscles but left the bone unbroken. ^{so that locomotion was possible} She went over a high rocky ridge and far down the other side and then when we came in sight again she returned to the original starting point. I shot at her twice at 300 ^{or} yds and finally hit her at a great distance. ^{Upon pacing it off I} ~~and~~ found it to be ^{or} 510 yds. The bullet struck her as she was walking in the rump and passed forward in to the lungs. She contained a large ^{the} foetus size of a house cat but hairless. As I was cutting the ^{foetal} membrane the old Indian stopped me ^{excitedly} and said the contents was valuable medicine. He drank up the contents of the sack on the spot. The Indians ^{with me affirm that the lambs} ~~say~~ the young ones are dropped in March. The stomach contents was chiefly grass. When I reached the camp the boys ^{there} showed me ^{three} deer ^{on} in the ridge above the station about 600 yds away but as it was dusk I could not see if there was ^{undoubtedly} a horned buck in the herd. These are ^{deer} the first I have seen ^{in the} ~~here~~ ^{par} here. No condors came in sight to-day while we were skinning. Saw several spotted lizards at 16,000 ft ^{ee} ~~and lower~~ They are the same sort as the one caught at the camp in a rat trap and ^{of any reptile} ~~are~~ the highest ~~reptile in~~ range in the Andes ^{no doubt.}

Nov 25th ^{in the morning} ^{at last hunt for} Went out early for ~~3~~ hours for huanacos as the train from Cuzco ^{does not} ^{until} ^{we climbed} arrives at 1 p.m. Went to the ridge where we first saw huanacos and where I saw a herd ~~tale~~ last night. Saw nothing of them nor the deer we saw from the station last night. Day clear and warm but with cold bitter wind ^{blowing} from the north. Took a look at the ^{viscachas} ~~vichas~~ cliffs but ^{found none at home} ~~saw nothing~~.
^{on returning to camp}
Returned at 11 a.m. and packed the outfit for Mollendo but no train arrived until after 4 p.m. Reached Juliaca at 9 p.m. and camped in the train. ^{with the remaining members of our expedition, Maynard, Ford & Morkill}
Nov 26th Day clear and warm Departed at 8 30. ~~saw~~ ^{no} vicungas until passing ^{ed} ^A ^{the} ^{pass} ^{we} ^{herd} ^{saw} ^{at} ^{we} ^{near} ^{the} ^{train} ^{we} ^{saw} ^{another} ^{of} ^{near} ^{the} ^{train}.
At ^{the} ^{pampa} ^{de} ^{Arrieros} ^{we} ^{saw} ^{another} ^{of} ^{near} ^{the} ^{train}.
Reached Arequipa at 5 p.m. Fields of wheat and alfalfa green but nearly ripe. There was no ^{snow} ^{now} on either the volcanoes of ^{On our journey} ^{up country in April they were both snow capped} ~~mist or Chania~~. The dry season being at its height. ~~Stopped only over night.~~
Nov 27th On the way out ^{of} ^{obtained} ^{the lofty volcano of} Arequipa we ^{got} a fine view of ^a Corapuna. The mountain ^{stood out clearly during the} ~~standing~~ all morning without a cloud near it. It formed the only snow mass in sight with the exception of a long snow bridge beyond it further north. Reached Mollendo at noon on a clear bright day. ~~Took rooms at Hotel Heurcata.~~